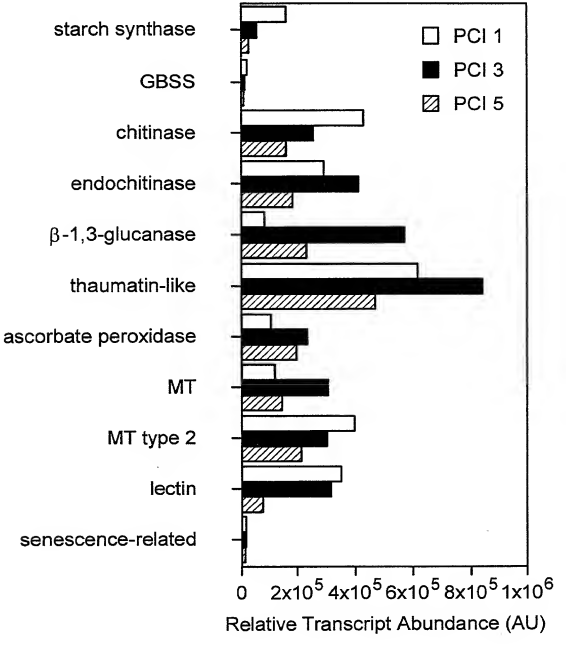
FIG. 1


starch synthase
GBSS
chitinase
endochitinase
β-1,3-glucanase
thaumatin-like
ascorbate peroxidase
MT
MT type 2
lectin
senescence-related
PCI 1
PCI 3
PCI 5
0
2x10^5
4x10^5
6x10^5
8x10^5
1x10^6
Relative Transcript Abundance (AU)

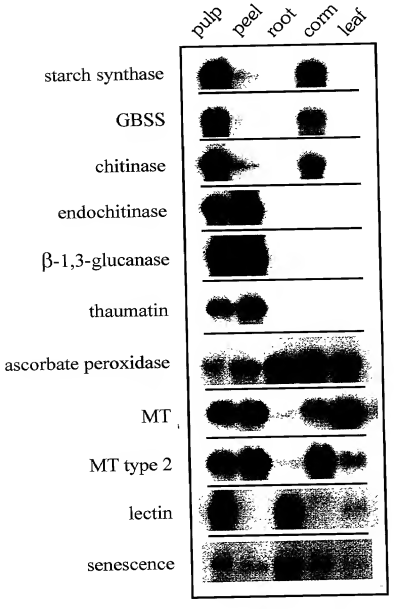

pulp
peel
root
corm
leaf
starch synthase
GBSS
chitinase
endochitinase
β-1,3-glucanase
thaumatin
ascorbate peroxidase
MT
MT type 2
lectin
senescence

FIG. 2

FIG. 3

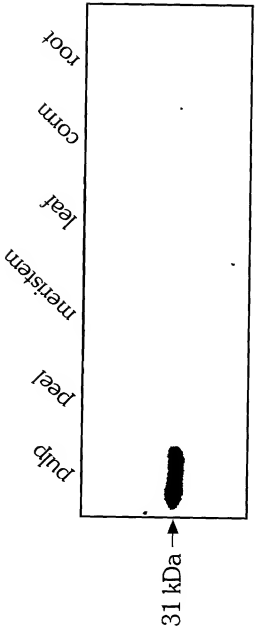


FIG. 4

FIG. 5

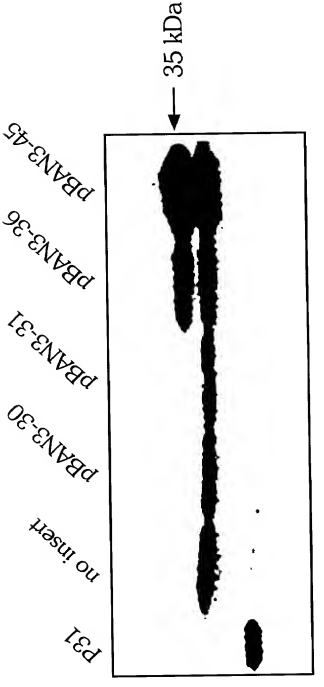


FIG. 6

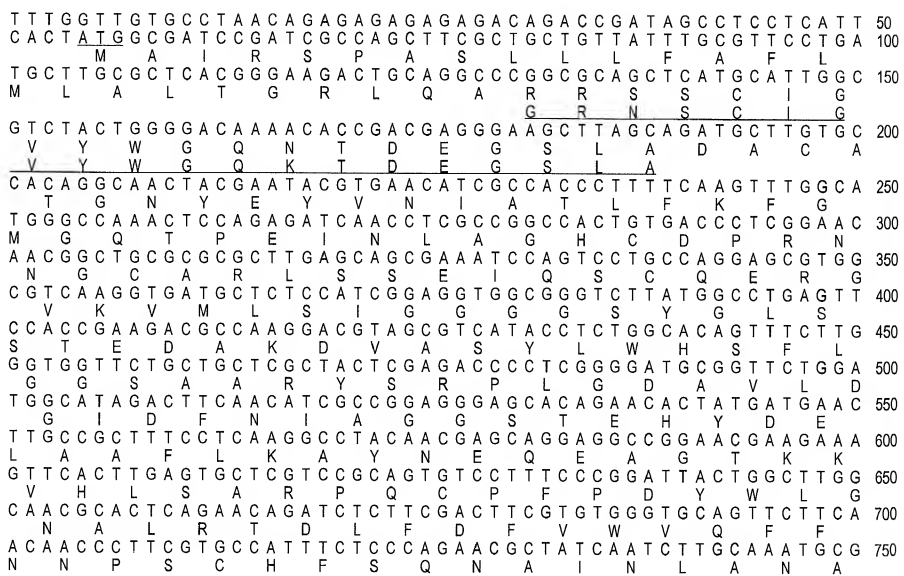


FIG. 7A

```
TTCAACAATTGGGTCATGTCCATCCCTGCGCAAAAGCTGTTCCTTGGGCT 800
  F   N   N   W   V   M   S   I   P   A   Q   K   L   F   L   G   L
TCCTGCTGCTCCTGAGGCTGCTCCAACTGGTGGCTACATTCCACCCCATG 850
    P   A   A   P   E   A   A   P   T   G   G   Y   I   P   P   H
ATCTCATATCTAAAGTTCTTCCGATCCTAAAGGATTCCGACAAGTACGCA 900
D   L   I   S   K   V   L   P   I   L   K   D   S   D   K   Y   A
GGAATCATGCTGTGGACTAGATACCACGACAGAAACTCCGGCTACAGTTC 950
  G   I   M   L   W   T   R   Y   H   D   R   N   S   G   Y   S   S
TCAAGTCAAGTCCCACGTGTGTCCAGCGCGTCGGTTCTCCAACATCTTAT 1000
    Q   V   K   S   H   V   C   P   A   R   R   F   S   N   I   L
CTATGCCGGTGAAGTCTTCCAAGTAAACCTGAACGGCGTAGATGATCGGT 1050
S   M   P   V   K   S   S   K   *
GGTCGAAAACTCCGATCATCATGGGTCCCCATCCGTATCCGTGCGTTGCT 1100
ACGTTATGGTGTTTCCCTTGTATGTTGGTCTTTTCAATAATATAATAAGG
GGTTAGTTTTACGTTTCCAAAAAAAAAAAAAAAAAAA
```

FIG. 7B

```
BANANA        MAIRSPASLLLFAFLMLALTGRLQARRSSCIGVYWGQNTDEGSL
CHICK PEA          MEKCFNIIPSL.LISLLIKSSNAAG.A......GN....
GRAPE            MARTPQSTPLLIS.SVLAL..TSYAGG.AI.....GN..T.
ARABIDOPSIS  MTNMTLRKHVIY.L.FISCSLSKPSDASRGG.AI.....GN..N.
TOBACCO              MIKYS.LLTA.V.FL.ALKLEAGD.VI.....GN....
SUGAR BEET       MAAKIVSVLFLIS.LIFASFESSHG.Q.VI.....G.....
```

FIG. 8A

```
BANANA        SDKYAGIMLWTRYHDRNSGYSSQVKSHVCPARRFSNILSMPVKSSK
CHICK PEA     .P..G.V.I.D.FN.AQ....NAI.GS
GRAPE         .P..G.V...SK.Y.DQ.....SI..S
ARABIDOPSIS   .R..G.V...SKFW.DKN....SILAS
TOBACCO       .P..G.V...SKFY.--N....AI.AN
SUGAR BEET    .A..G.V...SKAY.--.....AI..S
```

FIG. 8B

```
MT F1   GGCACGAGTACATCCTCTGCTTCTTCGAGCCTTTTCGCCTTCCTTCCTCGCTAACCATGT
MT F3                                   GGCACAGGGCACGAGGTTGCCTCTCGACATGT

MT F1   CGACCTGCGGCAACTGCGACTGCGTTGACAAGAGCCAGTGCGTGAAGAAGGGAAACAGCTA
MT F3   CGACCTGCGGCAACTGCGACTGCGCTGCAAGAGCCAGTGCGTGAAGAAGGGAAACAGCTA

MT F1   CGGTATCGATATTGTTGAGACCGAGAAGAGCTACGTCGACNAGGTGATCGTTGCCGCAGAA
MT F3   CGCTACCGAGACTGTTGCGACCGAGAAGAGCTTCTTGGATGGTGTAGTCGATGCCCCAGCA

MT F1   GCTGCCGAGCATGACGGCAAGTGCAAGTGCGGCGCCGCCTGCGCCTGCACCGACTGCAAGT
MT F3   GCCGCCGAGACGGAGGGAGACTGCAAGTGTGGTCCTTCCTGCGCCTGTGTTGACTGCCAAT

MT F1   GTGGCAACTGAGAAGCACTTGTGTCACTACCACTAAATAAAAGTTTGCAATGCATAAAAAA
MT F3   GTGGCCAGTGACAGCTTCTTAGCTAGTAATGACAATATATAATATGTTCGAGTAAATAACT

MT F1   CAAAAGAACAAAAAAAAAAAAGGAAGAAGAAGAAGGTGTGGCTATGTACTCTAATAATTCG
MT F3   TGGGGCTTGCATGGCTAATCGTTTATCAGTGTGTCATGATGTCAGATGGGATAGGGTTGTG

MT F1   GGCAGGCTGATAGGTTGTAANATGGGATAACGCAGTATCATCTGTGTTATCTCTGTCCTGT
MT F3   TGGGGCTTGCATGGCTAATCGTTTATCAGTGTGTCATGATGTCAGATGGGATAGGGTTGTG

MT F1   GGCAGGCTGATAGGTTGTAANATGGGATAACGCAGTATCATCTGTGTTATCTCTGTCCTGT
MT F3   TCTACCTTGTCTACATCTGTACTGTTATCATACATGCTAAATAAAGAATTATTAGTATTAA

MT F1   GTTTACAACTCTCCTATCTATCCTAGTCCATGAAATATTATTANTATTAAAAAAAAAAAAA
MT F3   AAAAAAAAAAAAAAAAA

MT F1   AAAAAAAA
```

FIG. 9

```
                  *   *   *       *
BANANA F-1    MS-TCGNCDCVDKSQCVKKGNSYGIDIVETEKSYVDEVI
BANANA F-3    ..-.......A.............ATET.A....FL.G.V
KIWIFRUIT     ..DK......A.S..........--......D...IED.V
APPLE         ..GK.D....A.ST.........DLV.....NRSM.T.F
PAPAYA        ..D.......A..T......S..TA..I.....IMT-.V

                          *  *     *  *    *  *
BANANA F-1    VAAEAAEHDGKCKCGAACACTDCKCGN  (65)
BANANA F-3    D.PA...TE.D....PS...V..Q..Q  (65)
KIWIFRUIT     MGVP...SG......TS.P.VN.T.D.  (63)
APPLE         .D.P............TG.S.VS.T..H  (66)
PAPAYA        MD.P...N.......PS.S..N.T..H  (65)
```

FIG. 10A

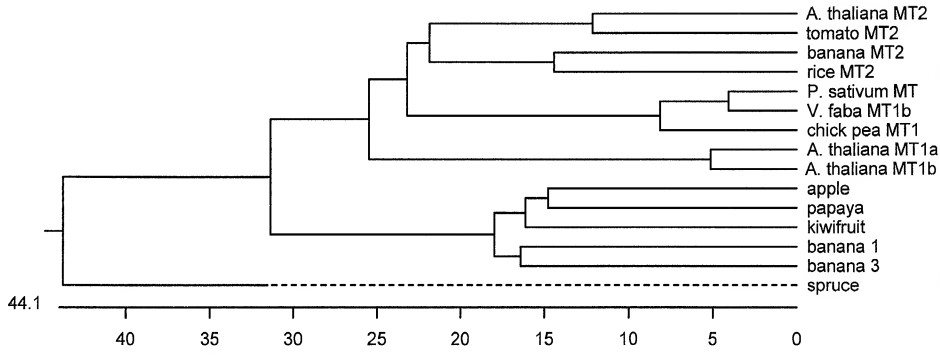


FIG. 10B

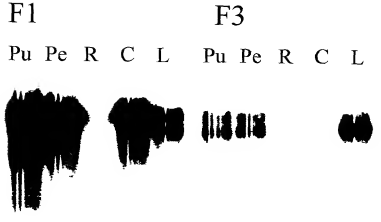
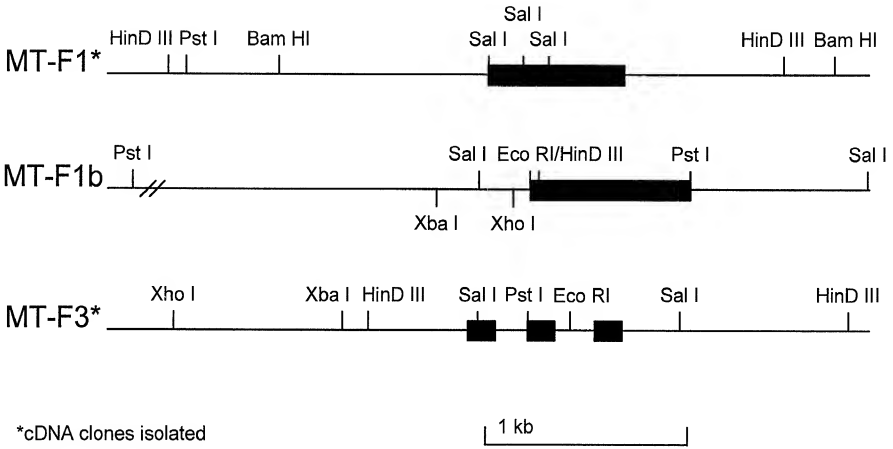


FIG. 11

FIG. 12



taagcttccGTGCCAAAGCggtctgcctttctacgccgcatcgggaaggggaaacacaaaaaaaagatcaggaagatgat

gctgacacgagaggtggaaggaagtttaccgctctcccataatagagattccttggatgcttctcccggtgggtgtgtg

gagcacagacactaatgtggtccgtcgttccaatccctcacgtaatcgggccgtctccggctataaataaccccccccg

accgagcgaacgcttctaaccaggaacgcataccacaccacaatttgttgagccgttgtgcttgttgcctctcgacATGT

CGACCTGCGGCAACTGCGACTGCGCTGACAAGAGCCAGTGCGTGTtaagttctcttcctccccgccctcccacctctttgt

gatacacacaacaaatatgcatgagggttgagtttaatattgacacaagaacttgggtttgctcctgcaggAAGAAGGG

AAACAGCTACGCTACCGAGACTGTTGCGACCGAGAAGaggtattattgatctctctcatgggtggggtgtgggagtatc

ttgtccgcatgatgaaattccacaacatgatgactcagcaaacaagatccttttattcttgagaaaacaactaaaagaag

aaaaaaaaaacagagaatatatctgcgattatttctttttgagtgatgtggaattccatgccatagcttaaaactatttt

cgaagtcgaagcatattacatacctcttgatgaattagtaaggatgattaaaagtaagccatctaaagcagagtaactac

ttacgtttctttcatgtcatctctgtcttacAGCTTCTTGGATGGTGTAGTCGATGCCCCACAGCCGCCGAAACGGAGG

GAGACTGCAAGTGTGGTCCTTCCTGCGCCTGTGTTGACTGCCAATGTGGCCAGTGACAGCTTCTTAGCTAGTAATGACAA

TATATAATATGTTCGAGTAAATAACTTGGGGCTTGCATGGCTAATCGTTTATCAGTGTGTCATGATGTCAGATGGGATAG

GGTTGTGTCTACCTTGTCTACATCTGTACTGTTATCATACATGATAAATAAAGAATTATTAGTATTaatttggtttcagg

tgataactactgctcctttcaaccgaatcactactgttacgtgaacaaacatgtaatagtagtgattcagtaggacgact

tttgtctatttaacttttgctttgggttgcaaaaatatgttcttcctgattcacgaaagagggtgtccatgagcattcgg

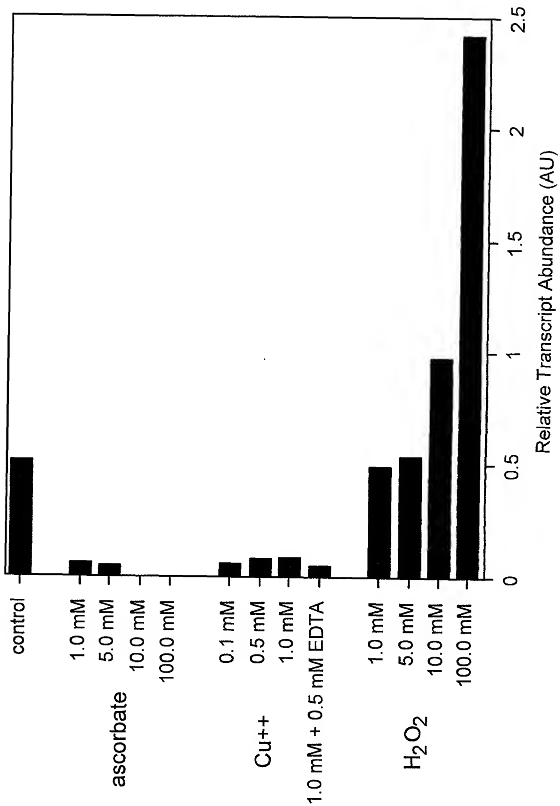
ctattgagcgatgttggatgaggcctcaaagggaagaatttatgcttaggactctgagttcgatggttgccaccgacctc

ctcaagtaccaagacacatacccttcctccgaggcctatccaacatcgctcgtatcgtcgac

FIG. 13

APPLN. FILING DATE: HEREWITH
TITLE: DNA REGULATORY ELEMENTS ASSOCIATED WITH [redacted] UIT DEVELOPMENT
INVENTOR(S): GREGORY D. MAY ET AL.
APPLICATION SERIAL NO: CIP OF 09/160,351 SHEET 15 of 94

FIG. 14


control
1.0 mM
5.0 mM
10.0 mM
100.0 mM
ascorbate
0.1 mM
0.5 mM
1.0 mM
1.0 mM + 0.5 mM EDTA
Cu++
1.0 mM
5.0 mM
10.0 mM
100.0 mM
H_2O_2
0
0.5
1
1.5
2
2.5
Relative Transcript Abundance (AU)

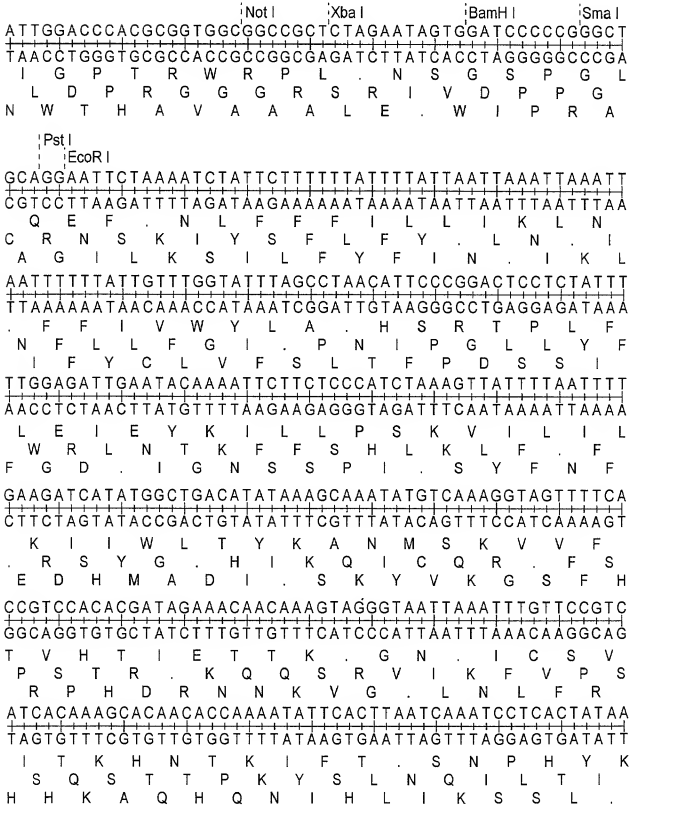


FIG. 15A-1

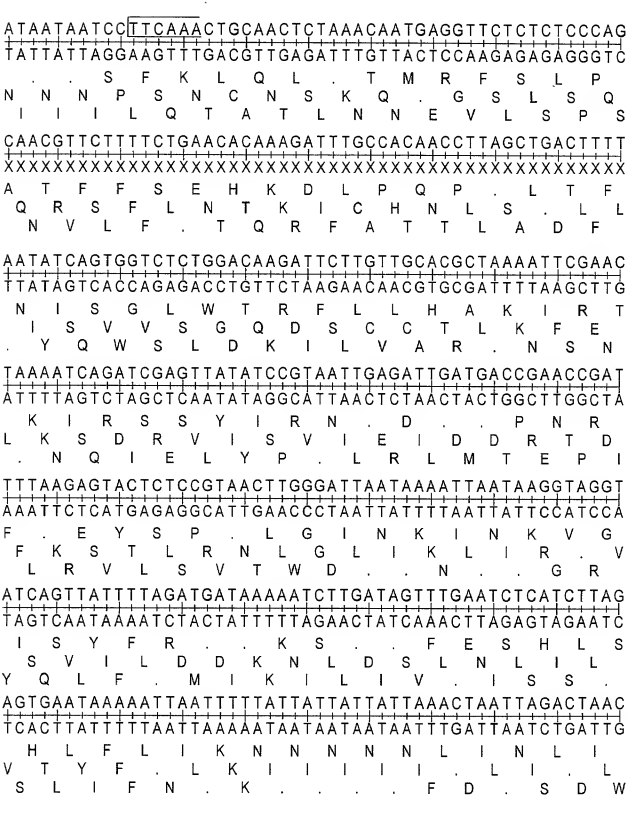

ATAATAATCCTTCAAACTGCAACTCTAAACAATGAGGTTCTCTCTCCCAG
TATTATTAGGAAGTTTGACGTTGAGATTTGTTACTCCAAGAGAGAGGGTC
. . S F K L Q L . T M R F S L P
N N N P S N C N S K Q . G S L S Q
I I I L Q T A T L N N E V L S P S
CAACGTTCTTTTCTGAACACAAAGATTTGCCACAACCTTAGCTGACTTTT
XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
A T F F S E H K D L P Q P . L T F
Q R S F L N T K I C H N L S . L L
N V L F . T Q R F A T T L A D F
AATATCAGTGGTCTCTGGACAAGATTCTTGTTGCACGCTAAAATTCGAAC
TTATAGTCACCAGAGACCTGTTCTAAGAACAACGTGCGATTTTAAGCTTG
N I S G L W T R F L L H A K I R T
I S V V S G Q D S C C T L K F E
. Y Q W S L D K I L V A R . N S N
TAAAATCAGATCGAGTTATATCCGTAATTGAGATTGATGACCGAACCGAT
ATTTTAGTCTAGCTCAATATAGGCATTAACTCTAACTACTGGCTTGGCTA
K I R S S Y I R N . D . . P N R
L K S D R V I S V I E I D D R T D
. N Q I E L Y P . L R L M T E P I
TTTAAGAGTACTCTCCGTAACTTGGGATTAATAAAATTAATAAGGTAGGT
AAATTCTCATGAGAGGCATTGAACCCTAATTATTTTAATTATTCCATCCA
F . E Y S P . L G I N K I N K V G
F K S T L R N L G L I K L I R . V
L R V L S V T W D . . N . . G R
ATCAGTTATTTTAGATGATAAAAATCTTGATAGTTTGAATCTCATCTTAG
TAGTCAATAAAATCTACTATTTTTAGAACTATCAAACTTAGAGTAGAATC
I S Y F R . . K S . . F E S H L S
S V I L D D K N L D S L N L I L
Y Q L F . M I K I L I V . I S S .
AGTGAATAAAAATTAATTTTTATTATTATTAAACTAATTAGACTAAC
TCACTTATTTTTAATTAAAAATAATAATAATAATTTGATTAATCTGATTG
H L F L I K N N N N N L I N L I
V T Y F . L K I I I I I . L I . L
S L I F N . K . . . . F D . S D W

FIG. 15A-2

```
GAAAAAAAAAAAGTTCTCTAGCCATTAAAGTCTGGTAGGACATAGAAATT
CTTTTTTTTTTTCAAGAGATCGGTAATTTCAGACCATCCTGTATCTTTAA
G  K  K  K  S  S  L  A  I  K  V  W  .  D  I  E  I
 E  K  K  K  V  L  .  P  L  K  S  G  R  T  .  K  L
  K  K  K  K  F  S  S  H  .  S  L  V  G  H  R  N

AATGAATTAAACTGTAACCATAAGGTTGAATTTTTGAACACATGTACAGG
TTACTTAATTTGACATTGGTATTCCAACTTAAAAACTTGTGTACATGTCC
 N  E  L  N  C  N  H  K  V  E  F  L  N  T  C  T  G
  M  N  .  T  V  T  I  R  L  N  F  .  T  H  V  G
.  .  I  K  L  .  P  .  G  .  I  F  E  H  M  Y  R
```

FIG. 15A-3

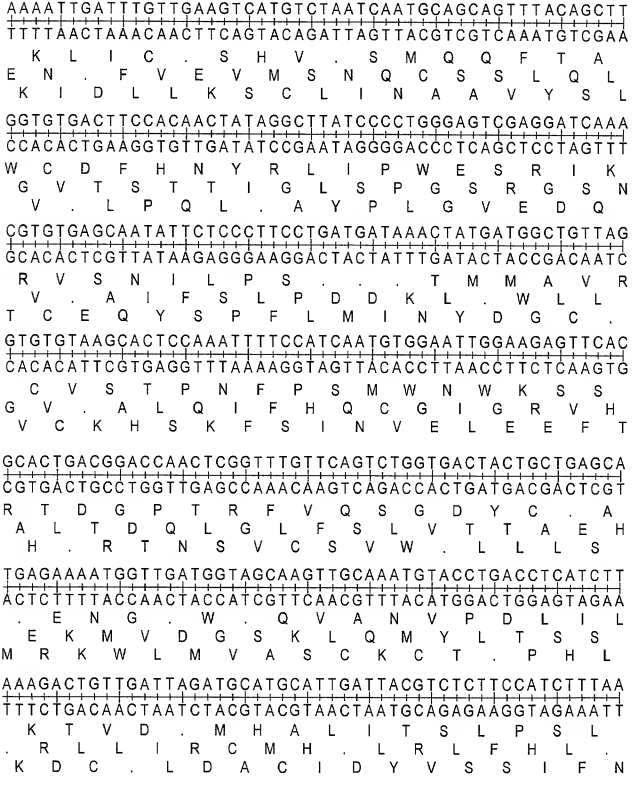

AAAATTGATTTGTTGAAGTCATGTCTAATCAATGCAGCAGTTTACAGCTT
TTTTAACTAAACAACTTCAGTACAGATTAGTTACGTCGTCAAATGTCGAA
K L I C . S H V . S M Q Q F T A
E N . F V E V M S N Q C S S L Q L
K I D L L K S C L I N A A V Y S L
GGTGTGACTTCCACAACTATAGGCTTATCCCCTGGGAGTCGAGGATCAAA
CCACACTGAAGGTGTTGATATCCGAATAGGGGACCCTCAGCTCCTAGTTT
W C D F H N Y R L I P W E S R I K
G V T S T T I G L S P G S R G S N
V . L P Q L . A Y P L G V E D Q
CGTGTGAGCAATATTCTCCCTTCCTGATGATAAACTATGATGGCTGTTAG
GCACACTCGTTATAAGAGGGAAGGACTACTATTTGATACTACCGACAATC
R V S N I L P S . . . T M M A V R
V . A I F S L P D D K L . W L L
T C E Q Y S P F L M I N Y D G C .
GTGTGTAAGCACTCCAAATTTTCCATCAATGTGGAATTGGAAGAGTTCAC
CACACATTCGTGAGGTTTAAAAGGTAGTTACACCTTAACCTTCTCAAGTG
C V S T P N F P S M W N W K S S
G V . A L Q I F H Q C G I G R V H
V C K H S K F S I N V E L E E F T
GCACTGACGGACCAACTCGGTTTGTTCAGTCTGGTGACTACTGCTGAGCA
CGTGACTGCCTGGTTGAGCCAAACAAGTCAGACCACTGATGACGACTCGT
R T D G P T R F V Q S G D Y C . A
A L T D Q L G L F S L V T T A E H
H . R T N S V C S V W . L L L S
TGAGAAAATGGTTGATGGTAGCAAGTTGCAAATGTACCTGACCTCATCTT
ACTCTTTTACCAACTACCATCGTTCAACGTTTACATGGACTGGAGTAGAA
. E N G . W . Q V A N V P D L I L
E K M V D G S K L Q M Y L T S S
M R K W L M V A S C K C T . P H L
AAAGACTGTTGATTAGATGCATGCATTGATTACGTCTCTTCCATCTTTAA
TTTCTGACAACTAATCTACGTACGTAACTAATGCAGAGAAGGTAGAAATT
K T V D . M H A L I T S L P S L
. R L L I R C M H . L R L F H L .
K D C . L D A C I D Y V S S I F N

FIG. 15B-1

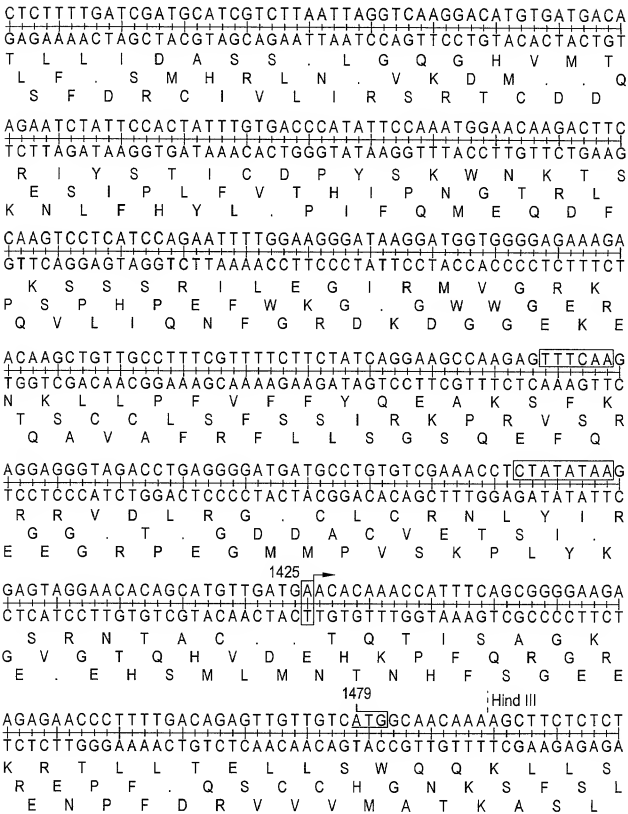


FIG. 15B-2

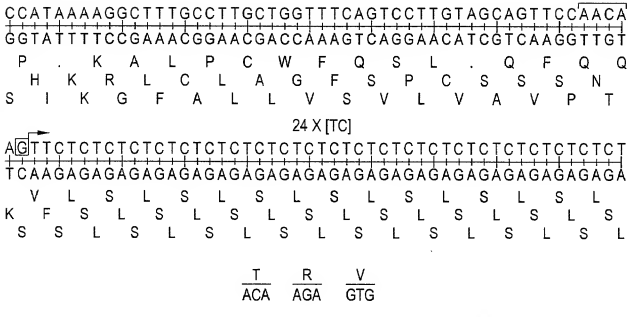

CCATAAAAGGCTTTGCCTTGCTGGTTTCAGTCCTTGTAGCAGTTCCAACA
GGTATTTTCCGAAACGGAACGACCAAAGTCAGGAACATCGTCAAGGTTGT
P . K A L P C W F Q S L . Q F Q Q
H K R L C L A G F S P C S S S N
S I K G F A L L V S V L V A V P T
24 X [TC]
AGTTCTCTCTCTCTCTCTCTCTCTCTCTCTCTCTCTCTCTCTCTCTCT
TCAAGAGAGAGAGAGAGAGAGAGAGAGAGAGAGAGAGAGAGAGAGAGA
V L S L S L S L S L S L S L S L S L
K F S L S L S L S L S L S L S L S L S
S S L S L S L S L S L S L S L S L
T R V
ACA AGA GTG

FIG. 15B-3

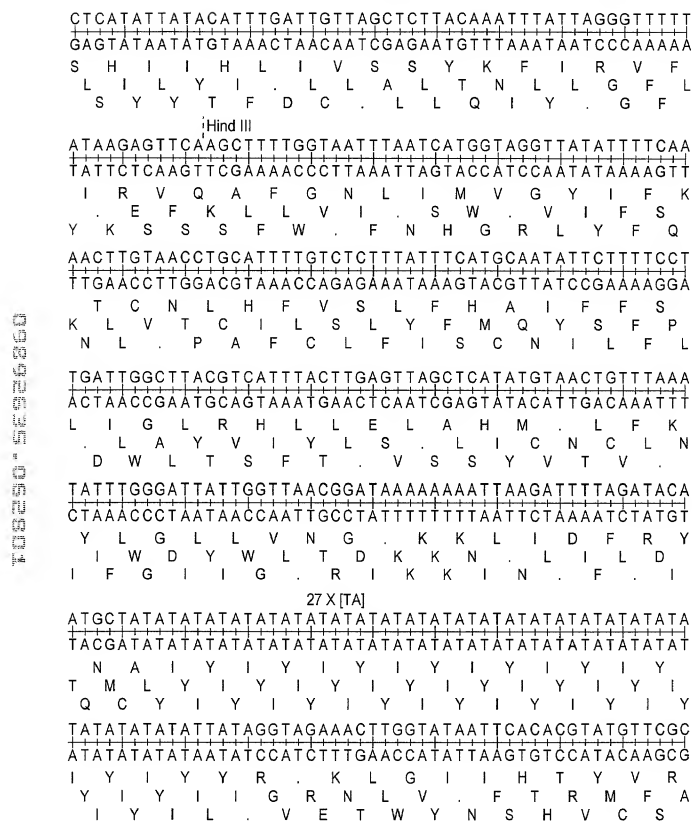


FIG. 15C-1

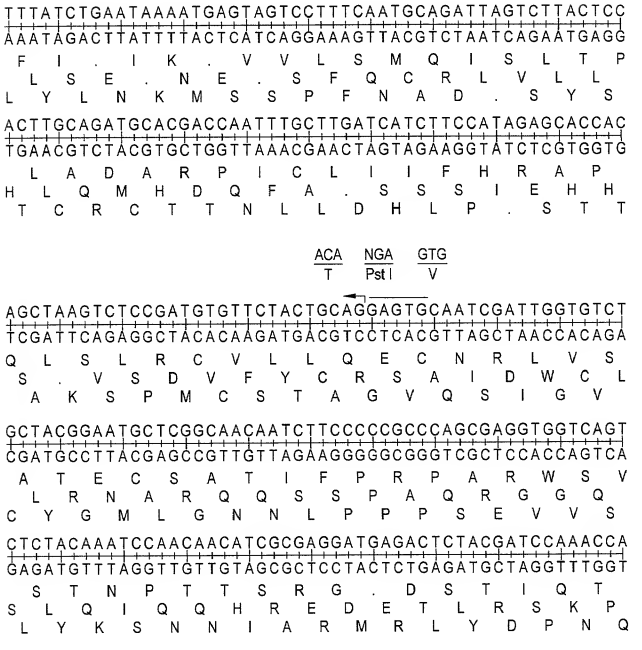

TTTATCTGAATAAAATGAGTAGTCCTTTCAATGCAGATTAGTCTTACTCC
AAATAGACTTATTTTACTCATCAGGAAAGTTACGTCTAATCAGAATGAGG
F I . I K . V V L S M Q I S L T P
L S E . N E . S F Q C R L V L L
L Y L N K M S S P F N A D . S Y S
ACTTGCAGATGCACGACCAATTTGCTTGATCATCTTCCATAGAGCACCAC
TGAACGTCTACGTGCTGGTTAAACGAACTAGTAGAAGGTATCTCGTGGTG
L A D A R P I C L I I F H R A P
H L Q M H D Q F A . S S S I E H H
T C R C T T N L L D H L P . S T T
ACA NGA GTG
T Pst I V
AGCTAAGTCTCCGATGTGTTCTACTGCAGGAGTGCAATCGATTGGTGTCT
TCGATTCAGAGGCTACACAAGATGACGTCCTCACGTTAGCTAACCACAGA
Q L S L R C V L L Q E C N R L V S
S . V S D V F Y C R S A I D W C L
A K S P M C S T A G V Q S I G V
GCTACGGAATGCTCGGCAACAATCTTCCCCCGCCCAGCGAGGTGGTCAGT
CGATGCCTTACGAGCCGTTGTTAGAAGGGGGCGGGTCGCTCCACCAGTCA
A T E C S A T I F P R P A R W S V
L R N A R Q Q S S P A Q R G G Q
C Y G M L G N N L P P P S E V V S
CTCTACAAATCCAACAACATCGCGAGGATGAGACTCTACGATCCAAACCA
GAGATGTTTAGGTTGTTGTAGCGCTCCTACTCTGAGATGCTAGGTTTGGT
S T N P T T S R G . D S T I Q T
S L Q I Q Q H R E D E T L R S K P
L Y K S N N I A R M R L Y D P N Q

FIG. 15C-2

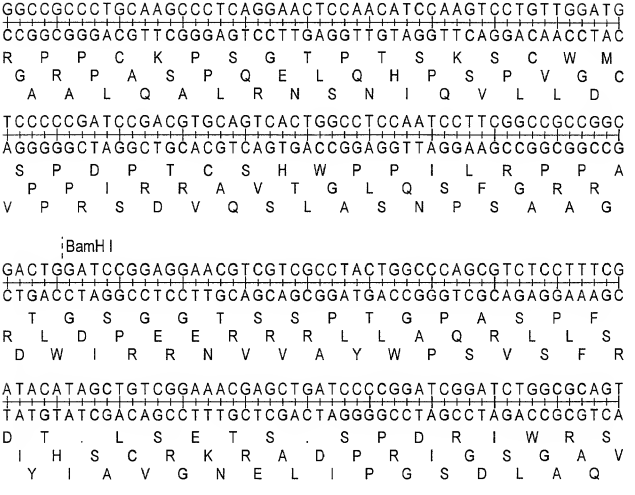

GGCCGCCCTGCAAGCCCTCAGGAACTCCAACATCCAAGTCCTGTTGGATG
CCGGCGGGACGTTCGGGAGTCCTTGAGGTTGTAGGTTCAGGACAACCTAC
R P P C K P S G T P T S K S C W M
G R P A S P Q E L Q H P S P V G C
A A L Q A L R N S N I Q V L L D
TCCCCCGATCCGACGTGCAGTCACTGGCCTCCAATCCTTCGGCCGCCGGC
AGGGGGCTAGGCTGCACGTCAGTGACCGGAGGTTAGGAAGCCGGCGGCCG
S P D P T C S H W P P I L R P P A
P P I R R A V T G L Q S F G R R
V P R S D V Q S L A S N P S A A G
BamH I
GACTGGATCCGGAGGAACGTCGTCGCCTACTGGCCCAGCGTCTCCTTTCG
CTGACCTAGGCCTCCTTGCAGCAGCGGATGACCGGGTCGCAGAGGAAAGC
T G S G G T S S P T G P A S P F
R L D P E E R R R L L A Q R L L S
D W I R R N V V A Y W P S V S F R
ATACATAGCTGTCGGAAACGAGCTGATCCCCGGATCGGATCTGGCGCAGT
TATGTATCGACAGCCTTTGCTCGACTAGGGGCCTAGCCTAGACCGCGTCA
D T . L S E T S . S P D R I W R S
I H S C R K R A D P R I G S G A V
Y I A V G N E L I P G S D L A Q

FIG. 15C-3

```
ACATCCTCCCCGCCATGCGCAACATCTACAATGCTTTGTCCTCGGCTGGC
TGTAGGAGGGGCGGTACGCGTTGTAGATGTTACGAAACAGGAGCCGACCG
 T  S  S  P  P  C  A  T  S  T  M  L  C  P  R  L  A
   H  P  P  R  H  A  Q  H  L  Q  C  F  V  L  G  W
Y  I  L  P  A  M  R  N  I  Y  N  A  L  S  S  A  G
                                 Sal I
CTGCAAAACCAGATCAAGGTCTCGACCGCGGTCGACACGGGCGTCCTCGG
GACGTTTTGGTCTAGTTCCAGAGCTGGCGCCAGCTGTGCCCGCAGGAGCC
  C  K  T  R  S  R  S  R  P  R  S  T  R  A  S  S
P  A  K  P  D  Q  G  L  D  R  G  R  H  G  R  P  R
 L  Q  N  Q  I  K  V  S  T  A  V  D  T  G  V  L  G

CACGTCCTACCCTCCCTCCGCCGGCGCCTTCTCCTCCGCCGCCCAGGCGT
GTGCAGGATGGGAGGGAGGCGGCCGCGGAAGAGGAGGCGGCGGGTCCGCA
A  R  P  T  L  P  P  P  A  P  S  P  P  P  P  R  R
 H  V  L  P  S  L  R  R  R  L  L  L  R  R  P  G  V
   T  S  Y  P  P  S  A  G  A  F  S  S  A  A  Q  A

ACCTGAGCCCCATCGTGCAGTTCTTGGCGAGTAACGGAGCCGCCGCTCCTG
TGGACTCGGGGTAGCACGTCAAGAACCGCTCATTGCCTCGCGGCGAGGAC
 T  .  A  P  S  C  S  S  W  R  V  T  E  R  R  S  W
   P  E  P  H  R  A  V  L  G  E  .  R  S  A  A  P
Y  L  S  P  I  V  Q  F  L  A  S  N  G  A  P  L  L
                                 Sma I     Bgl II
GTCAATGTGTACCCTTATTTTAGCTACACCGGCAACCCGGGACAGATCTC
CAGTTACACATGGGAATAAAATCGATGTGGCCGTTGGGCCCTGTCTAGAG
  S  M  C  T  L  I  L  A  T  P  A  T  R  D  R  S
G  Q  C  V  P  L  F  .  L  H  R  Q  P  G  T  D  L
 V  N  V  Y  P  Y  F  S  Y  T  G  N  P  G  Q  I  S

GCTGCCCTACGCCCTGTTCACGGCCTCCGGCGTCGTCGTGCAGGATGGGC
CGACGGGATGCGGGACAAGTGCCGGAGGCCGCAGCAGCACGTCCTACCCG
R  C  P  T  P  C  S  R  P  P  A  S  S  C  R  M  G
 A  A  L  R  P  V  H  G  L  R  R  R  R  A  G  W  A
   L  P  Y  A  L  F  T  A  S  G  V  V  V  Q  D  G
                                 Sal I
GATTCAGCTATCAGAACCTGTTCGACGCCATCGTCGACGCGGTCTTCGCG
CTAAGTCGATAGTCTTGGACAAGCTGCGGTAGCAGCTGCGCCAGAAGCGC
 D  S  A  I  R  T  C  S  T  P  S  S  T  R  S  S  R
   I  Q  L  S  E  P  V  R  R  H  R  R  R  G  L  R
R  X  S  Y  Q  N  L  F  D  A  I  V  D  A  V  F  A
```

FIG. 15D-1

```
GCGCTGGAGAGAGTGGGAGGGGCGAACGTGGCGGTGGTGGTGTCGGAGAG
CGCGACCTCTCTCACCCTCCCCGCTTGCACCGCCACCACCACAGCCTCTC
 R  W  R  E  W  E  G  R  T  W  R  W  W  C  R  R
G  A  G  E  S  G  R  G  E  R  G  G  G  G  V  G  E
 A  L  E  R  V  G  G  A  N  V  A  V  V  V  S  E  S

CGGGTGGCCGTCGGCGGGCGGAGGAGCCGAAGCGAGCACCAGCAACGCGC
GCCCACCGGCAGCCGCCCGCCTCCTCGGCTTCGCTCGTGGTCGTTGCGCG
A  G  G  R  R  R  A  E  E  P  K  R  A  P  A  T  R
 R  V  A  V  G  G  R  R  S  R  S  E  H  Q  Q  R  A
  G  W  P  S  A  G  G  G  A  E  A  S  T  S  N  A

AGACGTACAACCAGAACTTGATCAGGCATGTTGGCGGAGGAACGCCGAGG
TCTGCATGTTGGTCTTGAACTAGTCCGTACAACCGCCTCCTTGCGGCTCC
 R  R  T  T  R  T  .  S  G  M  L  A  E  E  R  R  G
  D  V  Q  P  E  L  D  Q  A  C  W  R  R  N  A  E
Q  T  Y  N  Q  N  L  I  R  H  V  G  G  G  T  P  R

AGACCAGGGAAGGAGATCGAGGCATACATATTCGAGATGTTCAACGAGAA
TCTGGTCCCTTCCTCTAGCTCCGTATGTATAAGCTCTACAAGTTGCTCTT
  D  Q  G  R  R  S  R  H  T  Y  S  R  C  S  T  R
E  T  R  E  G  D  R  G  I  H  I  R  D  V  Q  R  E
 R  P  G  K  E  I  E  A  Y  I  F  E  M  F  N  E  N

CCAGAAGGCTGGAGGGATCGAGCAGAACTTTGGCCTGTTTTATCCCAACA
GGTCTTCCGACCTCCCTAGCTCGTCTTGAAACCGGACAAAATAGGGTTGT
T  R  R  L  E  G  S  S  R  T  L  A  C  F  I  P  T
 P  E  G  W  R  D  R  A  E  L  W  P  V  L  S  Q  Q
  C  K  A  G  G  I  E  Q  N  F  G  L  F  Y  P  N

                        Hind III
AGCAGCCCGTATACCAAATAAGCTTT[TAG]AAACTAACTTGTAAGGTTGAT
TCGTCGGGCATATGGTTTATTCGAAAATCTTTGATTGAACATTCCAACTA
 S  S  P  Y  T  K  .  A  F  R  N  .  L  V  R  L  M
  A  A  R  I  P  N  K  L  L  E  T  N  L  .  G  .
K  Q  P  V  Y  Q  I  S  F  .  K  L  T  C  K  V  D

                  5 X [CTAC]
GAATCATCTCCTACCTACCTACCTACCTACGAATAAAACATGAAATAAAG
CTTAGTAGAGGATGGATGGATGGATGGATGCTTATTTTGTACTTTATTTC
  N  H  L  L  P  T  Y  L  P  T  N  K  T  .  N  K
.  I  I  S  Y  L  P  T  Y  L  R  I  K  H  E  I  K
 E  S  S  P  T  Y  L  P  T  Y  E  .  N  M  K  .  S
```

FIG. 15D-2

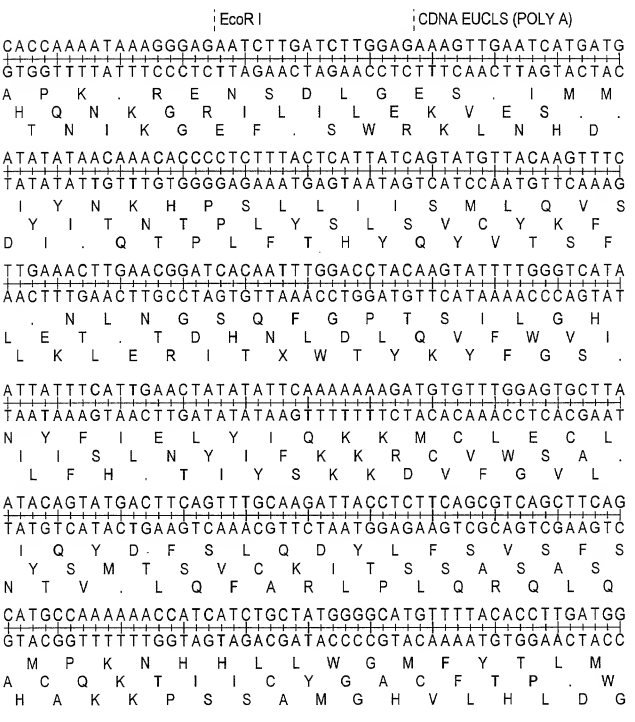

EcoR I
CDNA EUCLS (POLY A)
CACCAAAATAAAGGGAGAATCTTGATCTTGGAGAAAGTTGAATCATGATG
GTGGTTTTATTTCCCTCTTAGAACTAGAACCTCTTTCAACTTAGTACTAC
A P K . R E N S D L G E S . I M M
H Q N K G R I L I L E K V E S . .
T N I K G E F . S W R K L N H D
ATATATAACAAACACCCCTCTTTACTCATTATCAGTATGTTACAAGTTTC
TATATATTGTTTGTGGGGAGAAATGAGTAATAGTCATCCAATGTTCAAAG
I Y N K H P S L L I I S M L Q V S
Y I T N T P L Y S L S V C Y K F
D I . Q T P L F T H Y Q Y V T S F
TTGAAACTTGAACGGATCACAATTTGGACCTACAAGTATTTTGGGTCATA
AACTTTGAACTTGCCTAGTGTTAAACCTGGATGTTCATAAAACCCAGTAT
. N L N G S Q F G P T S I L G H
L E T . T D H N L D L Q V F W V I
L K L E R I T X W T Y K Y F G S .
ATTATTTCATTGAACTATATATTCAAAAAAAGATGTGTTTGGAGTGCTTA
TAATAAAGTAACTTGATATATAAGTTTTTTTCTACACAAACCTCACGAAT
N Y F I E L Y I Q K K M C L E C L
I I S L N Y I F K K R C V W S A .
L F H . T I Y S K K D V F G V L
ATACAGTATGACTTCAGTTTGCAAGATTACCTCTTCAGCGTCAGCTTCAG
TATGTCATACTGAAGTCAAACGTTCTAATGGAGAAGTCGCAGTCGAAGTC
I Q Y D F S L Q D Y L F S V S F S
Y S M T S V C K I T S S A S A S
N T V . L Q F A R L P L Q R Q L Q
CATGCCAAAAAACCATCATCTGCTATGGGGCATGTTTTACACCTTGATGG
GTACGGTTTTTTTGGTAGTAGACGATACCCCGTACAAAATGTGGAACTACC
M P K N H H L L W G M F Y T L M
A C Q K T I I C Y G A C F T P . W
H A K K P S S A M G H V L H L D G

FIG. 15E-1

```
TGCTACATCATCATCATTCATGTTTCATTTTAGGTCTCGTGCTCTTTATA
ACGATGTAGTAGTAGTAAGTACAAAGTAAAATCCAGAGCACGAGAAATAT
V  L  H  H  H  H  S  C  F  I  L  G  L  V  L  F  I
 C  Y  I  I  I  I  H  V  S  F  .  V  S  C  S  L  Y
  A  T  S  S  S  S  M  F  H  F  R  S  R  A  L  Y

TAGATCACATAAAAGTTTGGATCGCTTCAAGTTTCTAGGTTACATTGTAT
ATCTAGTGTATTTTCAAACCTAGCGAAGTTCAAAGATCCAATGTAACATA
 .  I  T  .  K  F  G  S  L  Q  V  S  R  L  H  C  M
  R  S  H  K  S  L  D  R  F  K  F  L  G  Y  I  V
I  D  H  I  K  V  W  I  A  S  S  F  .  V  T  L  Y

GCAGCACTTTGAGCCTACTGAACATTGTGACTGCCTTTTAGAACATTGGA
CGTCGTGAAACTCGGATGACTTGTAACACTGACGGAAAATCTTGTAACCT
  Q  H  F  E  P  T  E  H  C  D  C  L  L  E  H  W
C  S  T  L  S  L  L  N  I  V  T  A  F  .  N  I  G
 A  A  L  .  A  Y  .  T  L  .  L  P  F  R  T  L  D

    Pst I
CTGCAGGAA
---------→ 3559
GACGTCCTT
T  A  G
 L  Q  E
  C  R  K
```

FIG. 15E-2

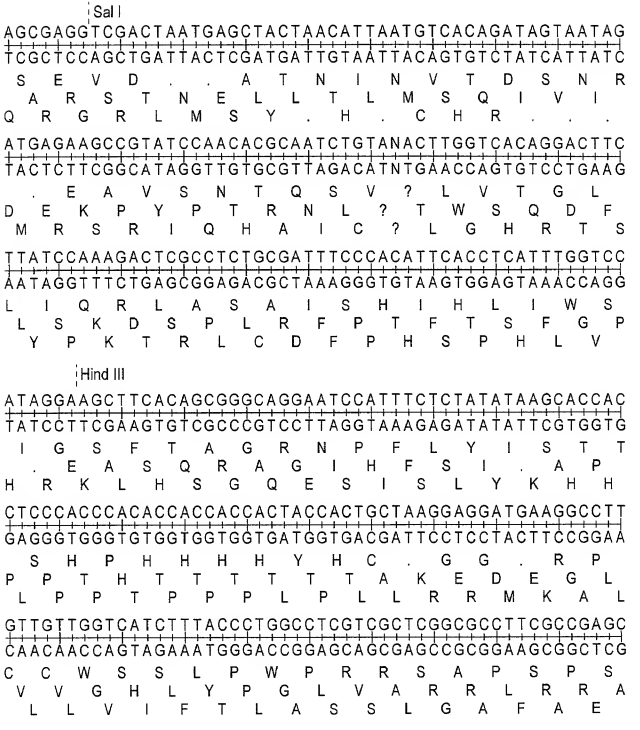

Sal I
AGCGAGGTCGACTAATGAGCTACTAACATTAATGTCACAGATAGTAATAG
TCGCTCCAGCTGATTACTCGATGATTGTAATTACAGTGTCTATCATTATC
S E V D . . A T N I N V T D S N R
A R S T N E L L T L M S Q I V I
Q R G R L M S Y . H . C H R . . .
ATGAGAAGCCGTATCCAACACGCAATCTGTANACTTGGTCACAGGACTTC
TACTCTTCGGCATAGGTTGTGCGTTAGACATNTGAACCAGTGTCCTGAAG
. E A V S N T Q S V ? L V T G L
D E K P Y P T R N L ? T W S Q D F
M R S R I Q H A I C ? L G H R T S
TTATCCAAAGACTCGCCTCTGCGATTTCCCACATTCACCTCATTTGGTCC
AATAGGTTTCTGAGCGGAGACGCTAAAGGGTGTAAGTGGAGTAAACCAGG
L I Q R L A S A I S H I H L I W S
L S K D S P L R F P T F T S F G P
Y P K T R L C D F P H S P H L V
Hind III
ATAGGAAGCTTCACAGCGGGCAGGAATCCATTTCTCTATATAAGCACCAC
TATCCTTCGAAGTGTCGCCCGTCCTTAGGTAAAGAGATATATTCGTGGTG
I G S F T A G R N P F L Y I S T T
. E A S Q R A G I H F S I . A P
H R K L H S G Q E S I S L Y K H H
CTCCCACCCACACCACCACCACTACCACTGCTAAGGAGGATGAAGGCCTT
GAGGGTGGGTGTGGTGGTGGTGATGGTGACGATTCCTCCTACTTCCGGAA
S H P H H H H Y H C . G G . R P
P P T H T T T T T T A K E D E G L
L P P T P P P L P L L R R M K A L
GTTGTTGGTCATCTTTACCCTGGCCTCGTCGCTCGGCGCCTTCGCCGAGC
CAACAACCAGTAGAAATGGGACCGGAGCAGCGAGCCGCGGAAGCGGCTCG
C C W S S L P W P R R S A P S P S
V V G H L Y P G L V A R R L R R A
L L V I F T L A S S L G A F A E

FIG. 16A-1

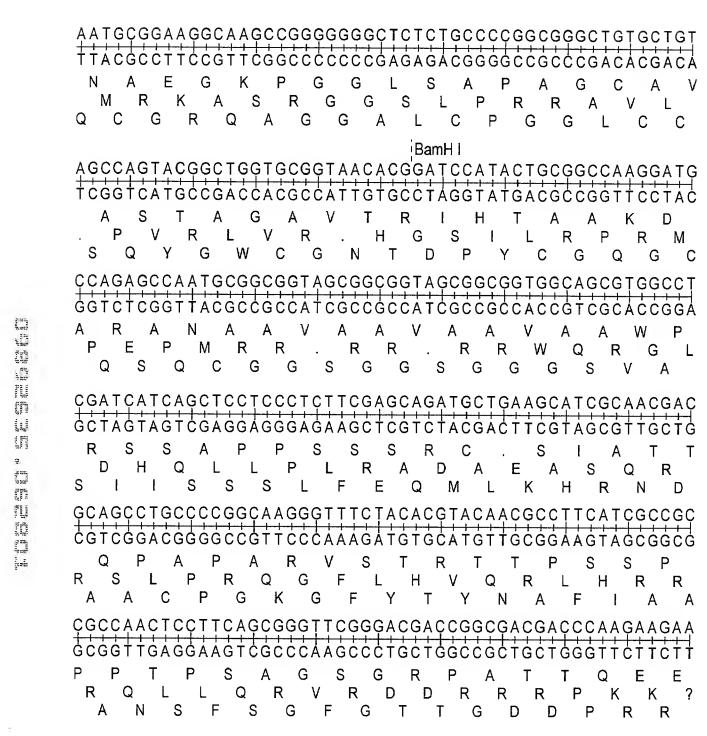


FIG. 16A-2

```
NAAGGAGATCGCGGCTTTCTTGGCGCANACGTCTCACGANACGACAGGTA
NTTCCTCTAGCGCCGAAAGAACCGCGTNTGCAGAGTGCTNTGCTGTCCAT
 ?  G  D  R  G  F  L  G  A  ?  V  S  R  ?  D  R  .
    K  E  I  A  A  F  L  A  ?  T  S  H  ?  T  T  G
?  R  R  S  R  L  S  W  R  ?  R  L  T  ?  R  Q  V

ATTCNCACATCTCCCGAAGCTCGTAAACTGTTTATGGGATANAAAACTGA
TAAGNGTGTAGAGGGCTTCGAGCATTTGACAAATACCCTATNTTTTGACT
   F  ?  H  L  P  K  L  V  N  C  L  W  D  ?  K  L
N  S  H  I  S  R  S  S  .  T  V  Y  G  I  ?  N  .
   I  ?  T  S  P  E  A  R  K  L  F  M  G  ?  K  T  E

ATGTTTGGGGTTTGGCAGGTGGGTNGGCGACGCGCCCGATGGTCCGTACG
TACAAACCCCAAACCGTCCACCCANCCGCTGCGCGGGCTACCAGGCATGC
N  V  W  G  L  A  G  G  ?  A  T  R  P  M  V  R  T
 M  F  G  V  W  Q  V  G  ?  R  R  A  R  W  S  V  R
   C  L  G  F  G  R  W  V  G  D  A  P  D  G  P  Y

CCTTGGGTTACTGCTTCGTCCAANAACAAAACCCTCATCGGANTACTGCG
GGAACCCAATGACGAAGCAGGTTNTTGTTTTGGGAGTAGCCTNATGACGC
 P  W  V  T  A  S  S  ?  N  K  T  L  I  G  ?  L  R
   L  G  L  L  L  R  P  ?  T  K  P  S  S  ?  Y  C
A  L  G  Y  C  F  V  Q  ?  Q  N  P  H  R  ?  T  A
```

FIG. 16A-3

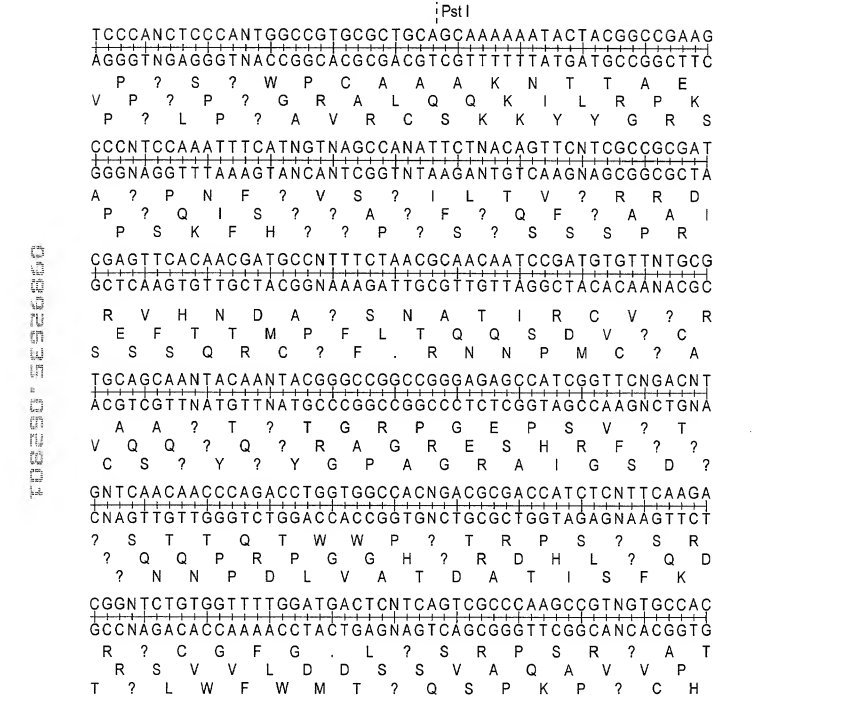

Pst I
TCCCANCTCCCANTGGCCGTGCGCTGCAGCAAAAAATACTACGGCCGAAG
AGGGTNGAGGGTNACCGGCACGCGACGTCGTTTTTTATGATGCCGGCTTC
P ? S ? W P C A A A K N T T A E
V P ? P ? G R A L Q Q K I L R P K
P ? L P ? A V R C S K K Y Y G R S
CCCNTCCAAATTTCATNGTNAGCCANATTCTNACAGTTCNTCGCCGCGAT
GGGNAGGTTTAAAGTANCANTCGGTNTAAGANTGTCAAGNAGCGGCGCTA
A ? P N F ? V S ? I L T V ? R R D
P ? Q I S ? ? A ? F ? Q F ? A A I
P S K F H ? ? P ? S ? S S S P R
CGAGTTCACAACGATGCCNTTTCTAACGCAACAATCCGATGTGTTNTGCG
GCTCAAGTGTTGCTACGGNAAAGATTGCGTTGTTAGGCTACACAANACGC
R V H N D A ? S N A T I R C V ? R
E F T T M P F L T Q Q S D V ? C
S S S Q R C ? F . R N N P M C ? A
TGCAGCAANTACAANTACGGGCCGGCCGGGAGAGCCATCGGTTCNGACNT
ACGTCGTTNATGTTNATGCCCGGCCGGCCCTCTCGGTAGCCAAGNCTGNA
A A ? T ? T G R P G E P S V ? T
V Q Q ? Q ? R A G R E S H R F ? ?
C S ? Y ? Y G P A G R A I G S D ?
GNTCAACAACCCAGACCTGGTGGCCACNGACGCGACCATCTCNTTCAAGA
CNAGTTGTTGGGTCTGGACCACCGGTGNCTGCGCTGGTAGAGNAAGTTCT
? S T T Q T W W P ? T R P S ? S R
? Q Q P R P G G H ? R D H L ? Q D
? N N P D L V A T D A T I S F K
CGGNTCTGTGGTTTTGGATGACTCNTCAGTCGCCCAAGCCGTNGTGCCAC
GCCNAGACACCAAAACCTACTGAGNAGTCAGCGGGTTCGGCANCACGGTG
R ? C G F G . L ? S R P S R ? A T
R S V V L D D S S V A Q A V V P
T ? L W F W M T ? Q S P K P ? C H

FIG. 16B-1

```
GACGTGATAACCGGGAGCTGGACGCCATCCAACGCCGACCAGGCGGCCGG
CTGCACTATTGGCCCTCGACCTGCGGTAGGTTGCGGCTGGTCCGCCGGCC
 T . . P G A G R H P T P T R R P
R R D N R E L D A I Q R R P G G R
 D V I T G S W T P S N A D Q A A G

AAGGCTTCCGGGCTACGGTGTCACCACCAACATCATCAATGGAGGGTTGG
TTCCGAAGGCCCGATGCCACAGTGGTGGTTGTAGTAGTTACCTCCCAACC
E G F R A T V S P P T S S M E G W
 K A S G L R C H H Q H H Q W R V G
 R L P G Y G V T T N I I N G G L

AGTGCGGGAAAGGGTACGATGCCAGGGTGGCGGATAGGATCGGCTTCTAC
TCACGCCCTTTCCCATGCTACGGTCCCACCGCCTATCCTAGCCGAAGATG
 S A G K G T M P G W R I G S A S T
 V R E R V R C Q G G G . D R L L
E C G K G Y D A R V A D R I G F Y

AAGAGGTACTGCGACTTGCTGGGGGTGAGCTACGGAGACAACTTGGACTG
TTCTCCATGACGCTGAACGACCCCCACTCGATGCCTCTGTTGAACCTGAC
 R G T A T C W G . A T E T T W T
Q E V L R L A G G E L R R Q L G L
 K R Y C D L L G V S Y G D N L D C

CTACAACCAGAGACCCTTTGCTTCTACAGCAGCTACAGCCACATTCTAGC
GATGTTGGTCTCTGGGAAACGAAGATGTCGTCGATGTCGGTGTAAGATCG
A T T R D P L L L Q Q L Q P H S S
 L Q P E T L C F Y S S Y S H I L A
 Y N Q R P F A S T A A T A T F .

GGTGAGCTATGGAGACAACTTGGAGTGCTACAACCAGAGACCCTTTACTT
CCACTCGATACCTCTGTTGAACCTCACGATGTTGGTCTCTGGGAAATGAA
 G E L W R Q L G V L Q P E T I Y L
 V S Y G D N L E C Y N Q R P F T
R . A M E T T W S A T T R D P L L
```

FIG. 16B-2

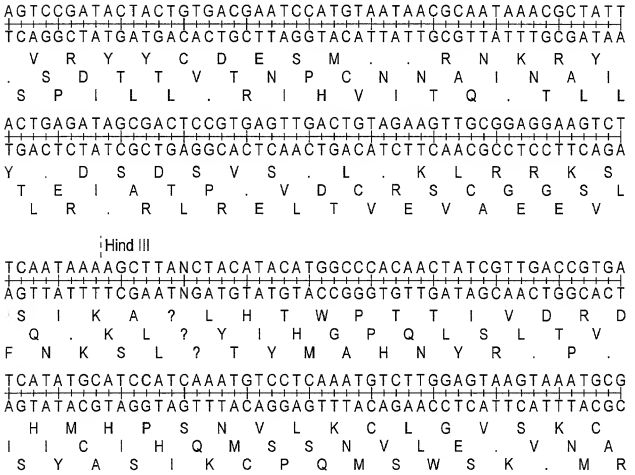

AGTCCGATACTACTGTGACGAATCCATGTAATAACGCAATAAACGCTATT
TCAGGCTATGATGACACTGCTTAGGTACATTATTGCGTTATTTGCGATAA
V R Y Y C D E S M . . R N K R Y
. S D T T V T N P C N N A I N A I
S P I L L . R I H V I T Q . T L L
ACTGAGATAGCGACTCCGTGAGTTGACTGTAGAAGTTGCGGAGGAAGTCT
TGACTCTATCGCTGAGGCACTCAACTGACATCTTCAACGCCTCCTTCAGA
Y . D S D S V S . L . K L R R K S
T E I A T P . V D C R S C G G S L
L R . R L R E L T V E V A E E V
Hind III
TCAATAAAAGCTTANCTACATACATGGCCCACAACTATCGTTGACCGTGA
AGTTATTTTCGAATNGATGTATGTACCGGGTGTTGATAGCAACTGGCACT
S I K A ? L H T W P T T I V D R D
Q . K L ? Y I H G P Q L S L T V
F N K S L ? T Y M A H N Y R . P .
TCATATGCATCCATCAAATGTCCTCAAATGTCTTGGAGTAAGTAAATGCG
AGTATACGTAGGTAGTTTACAGGAGTTTACAGAACCTCATTCATTTACGC
H M H P S N V L K C L G V S K C
I I C I H Q M S S N V L E . V N A
S Y A S I K C P Q M S W S K . M R

FIG. 16B-3

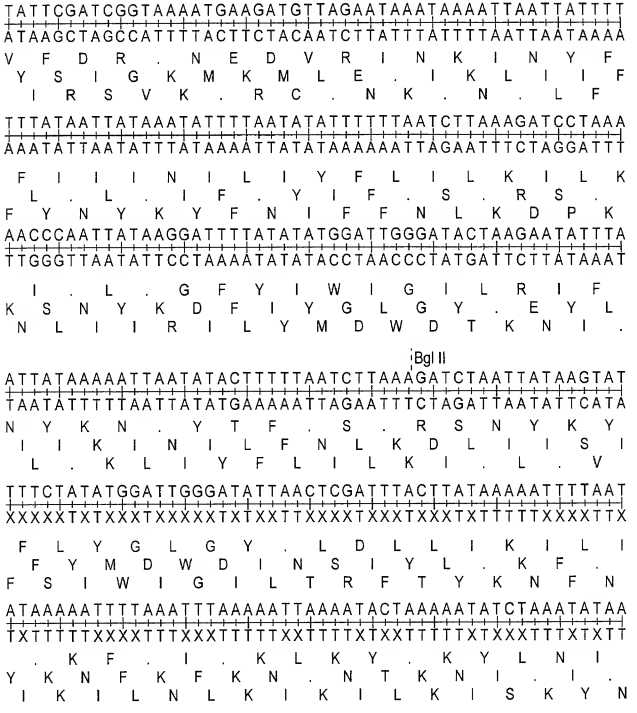


FIG. 16C-1

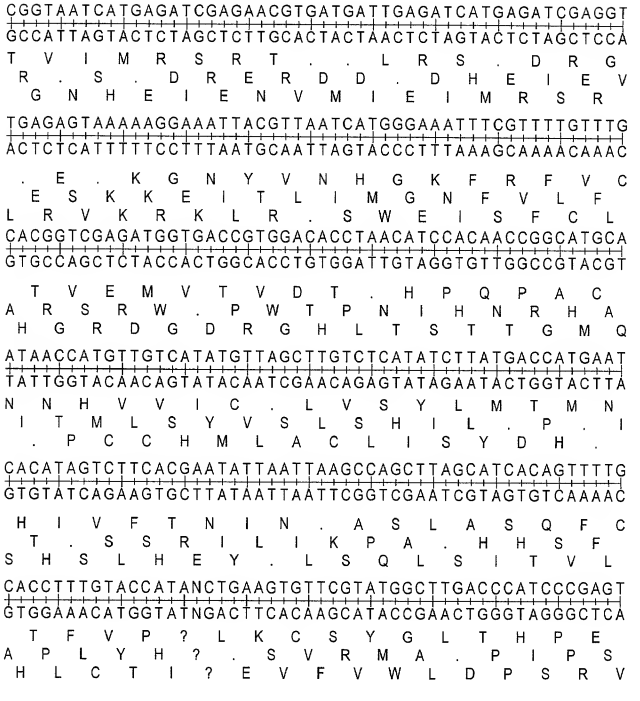

CGGTAATCATGAGATCGAGAACGTGATGATTGAGATCATGAGATCGAGGT
GCCATTAGTACTCTAGCTCTTGCACTACTAACTCTAGTACTCTAGCTCCA
T V I M R S R T . . L R S . D R G
R . S . D R E R D D . D H E I E V
G N H E I E N V M I E I M R S R
TGAGAGTAAAAAGGAAATTACGTTAATCATGGGAAATTTCGTTTTGTTTG
ACTCTCATTTTTCCTTTAATGCAATTAGTACCCTTTAAAGCAAAACAAAC
. E . K G N Y V N H G K F R F V C
E S K K E I T L I M G N F V L F
L R V K R K L R . S W E I S F C L
CACGGTCGAGATGGTGACCGTGGACACCTAACATCCACAACCGGCATGCA
GTGCCAGCTCTACCACTGGCACCTGTGGATTGTAGGTGTTGGCCGTACGT
T V E M V T V D T . H P Q P A C
A R S R W . P W T P N I H N R H A
H G R D G D R G H L T S T T G M Q
ATAACCATGTTGTCATATGTTAGCTTGTCTCATATCTTATGACCATGAAT
TATTGGTACAACAGTATACAATCGAACAGAGTATAGAATACTGGTACTTA
N N H V V I C . L V S Y L M T M N
I T M L S Y V S L S H I L . P . I
. P C C H M L A C L I S Y D H .
CACATAGTCTTCACGAATATTAATTAAGCCAGCTTAGCATCACAGTTTTG
GTGTATCAGAAGTGCTTATAATTAATTCGGTCGAATCGTAGTGTCAAAAC
H I V F T N I N . A S L A S Q F C
T . S S R I L I K P A . H H S F
S H S L H E Y . L S Q L S I T V L
CACCTTTGTACCATANCTGAAGTGTTCGTATGGCTTGACCCATCCCGAGT
GTGGAAACATGGTATNGACTTCACAAGCATACCGAACTGGGTAGGGCTCA
T F V P ? L K C S Y G L T H P E
A P L Y H ? . S V R M A . P I P S
H L C T I ? E V F V W L D P S R V

FIG. 16C-2

```
GTATGGTCTCCCGGANCCTGGAGCGTGTTAACCCGAGGTCTAGTTGAGGG
CATACCAGAGGGCCTNGGACCTCGCACAATTGGGCTCCAGATCAACTCCC
C  M  V  S  R  ?  L  E  R  V  N  P  R  S  S  .  G
 V  W  S  P  G  ?  W  S  V  L  T  R  G  L  V  E  G
  Y  G  L  P  ?  P  G  A  C  .  P  E  V  .  L  R

GCATAGACCTTGTTNTCTTAGGCAGAGGTTGAAGATCACTCCTTTAGCTA
CGTATCTGGAACAANAGAATCCGTCTCCAACTTCTAGTGAGGAAATCGAT
 A  .  T  L  ?  S  .  A  E  V  E  D  H  S  F  S  Y
  H  R  P  C  ?  L  R  Q  R  L  K  I  T  P  L  A
G  I  D  L  V  ?  L  G  R  G  .  R  S  L  L  .  L

TCCGTTGGGTGCCTATATAAAGGTCGAAATCATGAGGGGGATTCNTAACT
AGGCAACCCACGGATATATTTCCAGCTTTAGTACTCCCCCTAAGNATTGA
  P  L  G  A  Y  I  K  V  E  I  M  R  G  I  ?  N
I  R  W  V  P  I  .  R  S  K  S  .  G  G  F  ?  T
 S  V  G  C  L  Y  K  G  R  N  H  E  G  D  S  .  L

CGACCTATTCAATATTTGAGCTAGCAAGAGTTGGAGTTACGTGTATGAGG
GCTGGATAAGTTATAAACTCGATCGTTCTCAACCTCAATGCACATACTCC
S  T  Y  S  I  F  E  L  A  R  V  G  V  T  C  M  R
 R  P  I  Q  Y  L  S  .  Q  E  L  E  L  R  V  .  G
  D  L  F  N  I  .  A  S  K  S  W  S  Y  V  Y  E

TTCGACCCCCAATGCTGTTCCTGGGGTCGTTTTATACCTATTCCTGCATC
AAGCTGGGGGTTACGACAAGGACCCCAGCAAAATATGGATAAGGACGTAG
 F  D  P  Q  C  C  S  W  G  R  F  Y  T  Y  S  C  M
  S  T  P  N  A  V  P  G  V  A  F  I  P  I  P  A
V  R  P  P  M  L  F  L  G  S  L  L  Y  L  F  L  H

GTGATCATACATAGTAGCTTTAATCATCTTCAGTCATCATCGTACGTTGG
CACTAGTATGTATCATCGAAATTAGTAGAAGTCAGTAGTAGCATGCAACC
  .  S  Y  I  V  A  L  I  I  F  S  H  H  R  T  L
C  D  H  T  .  .  L  .  S  S  S  V  I  I  V  R  W
 V  I  I  H  S  S  F  N  H  L  Q  S  S  S  Y  V  G
```

FIG. 16C-3

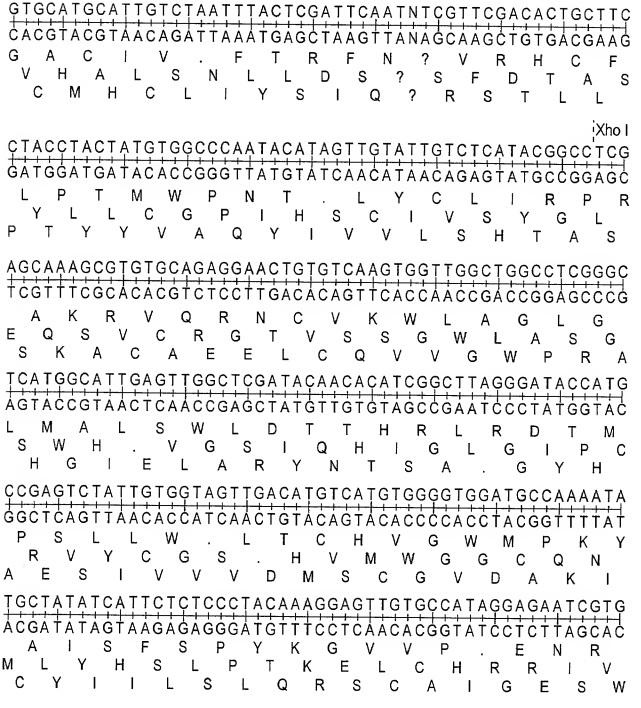

GTGCATGCATTGTCTAATTTACTCGATTCAATNTCGTTCGACACTGCTTC
CACGTACGTAACAGATTAAATGAGCTAAGTTANAGCAAGCTGTGACGAAG
G A C I V . F T R F N ? V R H C F
V H A L S N L L D S ? S F D T A S
C M H C L I Y S I Q ? R S T L L
Xho I
CTACCTACTATGTGGCCCAATACATAGTTGTATTGTCTCATACGGCCTCG
GATGGATGATACACCGGGTTATGTATCAACATAACAGAGTATGCCGGAGC
L P T M W P N T . L Y C L I R P R
Y L L C G P I H S C I V S Y G L
P T Y Y V A Q Y I V V L S H T A S
AGCAAAGCGTGTGCAGAGGAACTGTGTCAAGTGGTTGGCTGGCCTCGGGC
TCGTTTCGCACACGTCTCCTTGACACAGTTCACCAACCGACCGGAGCCCG
A K R V Q R N C V K W L A G L G
E Q S V C R G T V S S G W L A S G
S K A C A E E L C Q V V G W P R A
TCATGGCATTGAGTTGGCTCGATACAACACATCGGCTTAGGGATACCATG
AGTACCGTAACTCAACCGAGCTATGTTGTAGCCGAATCCCTATGGTAC
L M A L S W L D T T H R L R D T M
S W H . V G S I Q H I G L G I P C
H G I E L A R Y N T S A . G Y H
CCGAGTCTATTGTGGTAGTTGACATGTCATGTGGGGTGGATGCCAAAATA
GGCTCAGTTAACACCATCAACTGTACAGTACACCCCACCTACGGTTTAT
P S L L W . L T C H V G W M P K Y
R V Y C G S . H V M W G G C Q N
A E S I V V V D M S C G V D A K I
TGCTATATCATTCTCTCCCTACAAAGGAGTTGTGCCATAGGAGAATCGTG
ACGATATAGTAAGAGAGGGATGTTTCCTCAACACGGTATCCTCTTAGCAC
A I S F S P Y K G V V P . E N R
M L Y H S L P T K E L C H R R I V
C Y I I L S L Q R S C A I G E S W

FIG. 16D-1

```
GACACGGCTTGGGTTCTGTGGTCGGTCCTTGTTCGCCTCAGTTGGGTGGA
CTGTGCCGAACCCAAGACACCAGCCAGGAACAAGCGGAGTCAACCCACCT
G H G L G S V V G P C S P Q L G G
 D T A W V L W S V L V R L S W V D
  T R L G F C G R S L F A S V G W

TTACTTCATCAAGTTGGCCNTCTGTTGGCTGGGCAAAGTACACTTGGTAG
AATGAAGTAGTTCAACCGGNAGACAACCGACCCGTTTCATGTGAACCATC
 L L H Q V G ? L L A G Q S T L G R
  Y F I K L A ? C W L G K V H L V
I T S S S W P S V G W A K Y T W .

GGATGGTCGAGACAAGNCCAAGGAAGGTTGGCTAAGACTTGGTTTTCGAC
CCTACCAGCTCTGTTCNGGTTCCTTCCAACCGATTCTGAACCAAAAGCTG
  D G R D K ? K E G W L R L G F R
G M V E T ? P R K V G . D L V F D
 G W S R Q ? Q G R L A K T W F S T

AATCAATTGTTTATGAGGCGAATGGTATCCCTCCGTTGGGGTGTCTGCTC
TTAGTTAACAAATACTCCGCTTACCATAGGGAGGCAACCCCACAGACGAG
Q S I V Y E A N G I P P L G C L L
 N Q L F M R R M V S L R W G V C S
  I N C L . G E W Y P S V G V S A

GTTTCGATTTGTTGCGATGGATTGTTTGTTGTAGGAGGCTTGGTTCGATT
CAAAGCTAAACAACGCTACCTAACAAACAACATCCTCCGAACCAAGCTAA
 V S I C C D G L F V V G G L V R L
  F R F V A M D C L L . E A W F D
R F D L L R W I V C C R R L G S I

GCTCTTAAGTCGGGAGAAGGTATTTGNTAAGGAGTTCAATTTGACCATGT
CGAGAATTCAXCCCTCTTCCATAAACNATTCCTCAAGTTAAACTGGTACA
  L L S R E K V F ? K E F N L T M
C S . V G R R Y L ? R S S I . P C
 A L K S G E G I ? . G V Q F D H V
```

FIG. 16D-2

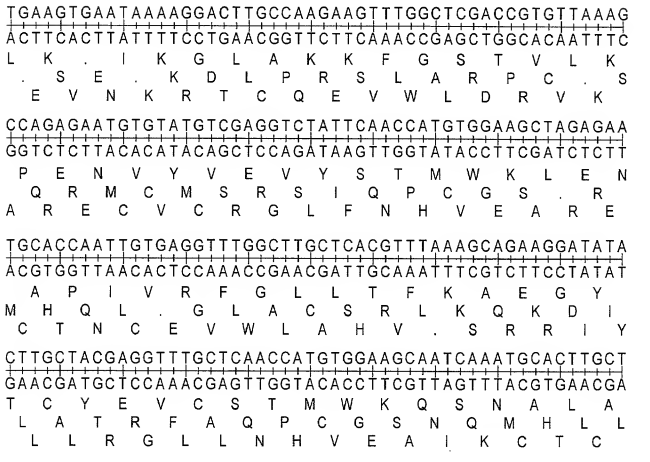

TGAAGTGAATAAAAGGACTTGCCAAGAAGTTTGGCTCGACCGTGTTAAAG
ACTTCACTTATTTTCCTGAACGGTTCTTCAAACCGAGCTGGCACAATTTC
L K . I K G L A K K F G S T V L K
. S E . K D L P R S L A R P C . S
E V N K R T C Q E V W L D R V K
CCAGAGAATGTGTATGTCGAGGTCTATTCAACCATGTGGAAGCTAGAGAA
GGTCTCTTACACATACAGCTCCAGATAAGTTGGTATACCTTCGATCTCTT
P E N V Y V E V Y S T M W K L E N
Q R M C M S R S I Q P C G S . R
A R E C V C R G L F N H V E A R E
TGCACCAATTGTGAGGTTTGGCTTGCTCACGTTTAAAGCAGAAGGATATA
ACGTGGTTAACACTCCAAACCGAACGATTGCAAATTTCGTCTTCCTATAT
A P I V R F G L L T F K A E G Y
M H Q L . G L A C S R L K Q K D I
C T N C E V W L A H V . S R R I Y
CTTGCTACGAGGTTTGCTCAACCATGTGGAAGCAATCAAATGCACTTGCT
GAACGATGCTCCAAACGAGTTGGTACACCTTCGTTAGTTTACGTGAACGA
T C Y E V C S T M W K Q S N A L A
L A T R F A Q P C G S N Q M H L L
L L R G L L N H V E A I K C T C

FIG. 16D-3

```
ATGAGGTTTGGCTTGACTTACTCGACAATGGACGCTNGTAAGTGAGAAGG
TACTCCAAACCGAACTGAATGAGCTGTTACCTGCGANCATTCACTCTTCC
 M  R  F  G  L  T  Y  S  T  M  D  A  ?  K  .  E  G
  .  G  L  A  .  L  T  R  Q  W  T  L  V  S  E  K
Y  E  V  W  L  D  L  L  D  N  G  R  ?  .  V  R  R

                            Spe I
GACTANCCAAGACTTAGTTGGCAAGGACTAGTCGATACTTGCTCGACAAT
CTGATNGGTTCTGAATCAACCGTTCCTGATCAGCTATGAACGAGCTGTTA
  T  ?  Q  D  L  V  G  K  D  .  S  I  L  A  R  Q
G  L  ?  K  T  .  L  A  R  T  S  R  Y  L  L  D  N
 D  ?  P  R  L  S  W  Q  G  L  V  D  T  C  S  T  I

                                         Sal I
AGATGCCTATAGGTAATGGATTGACTGAGACTTAGTCGACAAAGACTAGC
TCTACGGATATCCATTACCTAACTGACTCTGAATCAGCTGTTTCTGATCG
.  M  P  I  G  N  G  L  T  E  T  .  S  T  K  T  S
 R  C  L  .  V  M  D  .  L  R  L  S  R  Q  R  L  A
  D  A  Y  R  .  W  I  D  .  D  L  V  D  K  D  .

                                             Xho I
TGAGACTTAGTGGGCAATGGATGCCTATAAGTAAGAAAGGATGGCTCGAG
ACTCTGAATCACCCGTTACCTACGGATGTTCATTCTTTCCTACCGAGCTC
 .  D  L  V  G  N  G  C  L  .  V  R  K  D  G  S  R
  E  T  .  W  A  M  D  A  Y  K  .  E  R  M  A  R
L  R  L  S  G  Q  W  M  P  I  S  K  K  G  W  L  E

ATTAATAAAGATCAAATAATTAATATAAATTTATCAAACACTTAATGGAC
TAATTATTTCTAGTTTATTAATTATATTTAAATAGTTTGTGAATTACCTG
  L  I  K  I  K  .  L  I  .  I  Y  Q  T  L  N  G
D  .  .  R  S  N  N  .  Y  K  F  I  K  H  L  M  D
 I  N  K  D  Q  I  I  N  I  N  L  S  N  T  .  W  T

GCATATAAGTGAGAAAGGACGGATCGAGATTAATAAAGATCAAATAATTA
CGTATATTCACTCTTTCCTGCCTAGCTCTAATTATTTCTAGTTTATTAAT
R  I  .  V  R  K  D  G  S  R  L  I  K  I  K  .  L
 A  Y  K  .  E  R  T  D  R  D  .  .  R  S  N  N  .
  H  I  S  E  K  G  R  I  E  I  N  K  D  Q  I  I
```

FIG. 16E-1

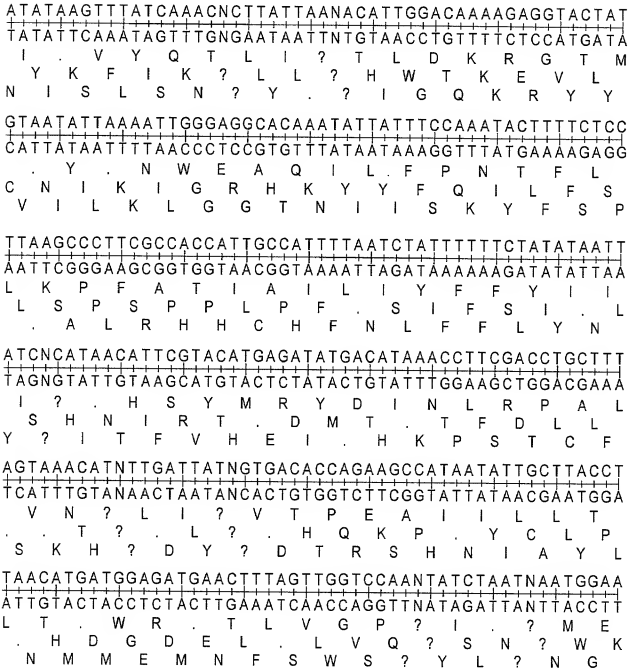

ATATAAGTTTATCAAACNCTTATTAANACATTGGACAAAAGAGGTACTAT
TATATTCAAATAGTTTGNGAATAATTNTGTAACCTGTTTTCTCCATGATA
I . V Y Q T L I ? T L D K R G T M
Y K F I K ? L L ? H W T K E V L
N I S L S N ? Y . ? I G Q K R Y Y
GTAATATTAAAATTGGGAGGCACAAATATTATTTCCAAATACTTTTCTCC
CATTATAATTTTAACCCTCCGTGTTTATAATAAAGGTTTATGAAAAGAGG
. Y . N W E A Q I L F P N T F L
C N I K I G R H K Y Y F Q I L F S
V I L K L G G T N I I S K Y F S P
TTAAGCCCTTCGCCACCATTGCCATTTTAATCTATTTTTTCTATATAATT
AATTCGGGAAGCGGTGGTAACGGTAAAATTAGATAAAAAAGATATATTAA
L K P F A T I A I L I Y F F Y I I
L S P S P P L P F . S I F S I . L
. A L R H H C H F N L F F L Y N
ATCNCATAACATTCGTACATGAGATATGACATAAACCTTCGACCTGCTTT
TAGNGTATTGTAAGCATGTACTCTATACTGTATTTGGAAGCTGGACGAAA
I ? . H S Y M R Y D I N L R P A L
S H N I R T . D M T . T F D L L
Y ? I T F V H E I . H K P S T C F
AGTAAACATNTTGATTATNGTGACACCAGAAGCCATAATATTGCTTACCT
TCATTTGTANAACTAATANCACTGTGGTCTTCGGTATTATAACGAATGGA
V N ? L I ? V T P E A I I L L T
. . T ? . L ? . H Q K P . Y C L P
S K H ? D Y ? D T R S H N I A Y L
TAACATGATGGAGATGAACTTTAGTTGGTCCAANTATCTAATNAATGGAA
ATTGTACTACCTCTACTTGAAATCAACCAGGTTNATAGATTANTTACCTT
L T . W R . T L V G P ? I . ? M E
. H D G D E L . L V Q ? S N ? W K
N M M E M N F S W S ? Y L ? N G

FIG. 16E-2

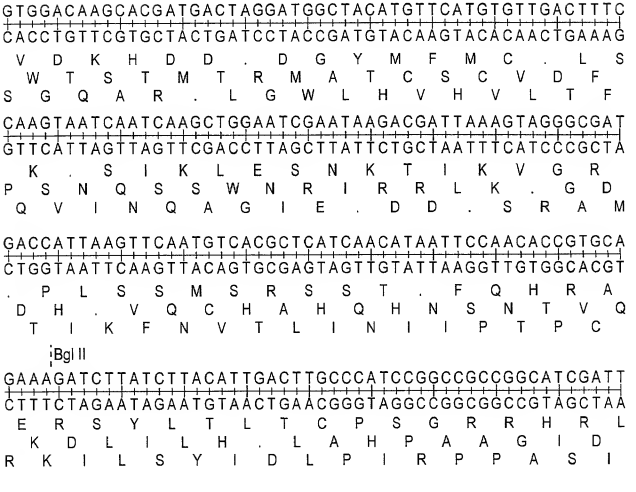

GTGGACAAGCACGATGACTAGGATGGCTACATGTTCATGTGTTGACTTTC
CACCTGTTCGTGCTACTGATCCTACCGATGTACAAGTACACAACTGAAAG
V D K H D D . D G Y M F M C . L S
W T S T M T R M A T C S C V D F
S G Q A R . L G W L H V H V L T F
CAAGTAATCAATCAAGCTGGAATCGAATAAGACGATTAAAGTAGGGCGAT
GTTCATTAGTTAGTTCGACCTTAGCTTATTCTGCTAATTTCATCCCGCTA
K . S I K L E S N K T I K V G R
P S N Q S S W N R I R R L K . G D
Q V I N Q A G I E . D D . S R A M
GACCATTAAGTTCAATGTCACGCTCATCAACATAATTCCAACACCGTGCA
CTGGTAATTCAAGTTACAGTGCGAGTAGTTGTATTAAGGTTGTGGCACGT
. P L S S M S R S S T . F Q H R A
D H . V Q C H A H Q H N S N T V Q
T I K F N V T L I N I I P T P C
BglII
GAAAGATCTTATCTTACATTGACTTGCCCATCCGGCCGCCGGCATCGATT
CTTTCTAGAATAGAATGTAACTGAACGGGTAGGCCGGCGGCCGTAGCTAA
E R S Y L T L T C P S G R R H R L
K D L I L H . L A H P A A G I D
R K I L S Y I D L P I R P P A S I

FIG. 16E-3

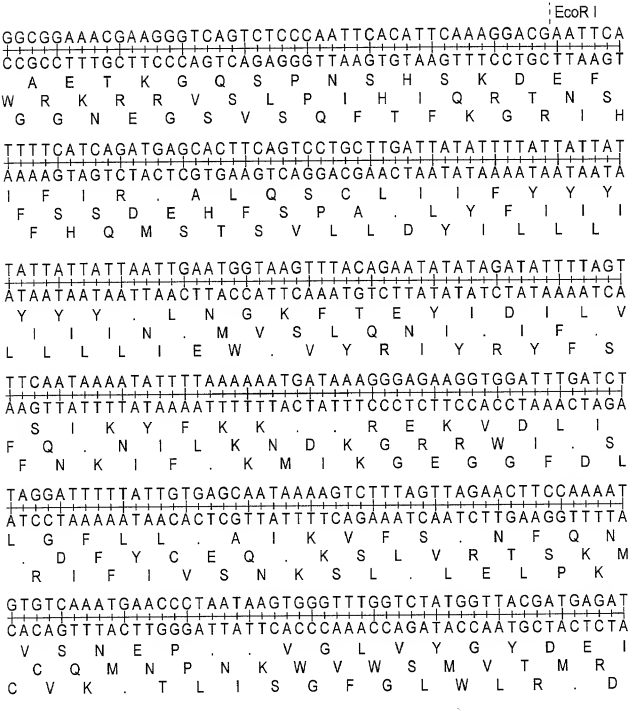

EcoR I
GGCGGAAACGAAGGGTCAGTCTCCCAATTCACATTCAAAGGACGAATTCA
CCGCCTTTGCTTCCCAGTCAGAGGGTTAAGTGTAAGTTTCCTGCTTAAGT
A E T K G Q S P N S H S K D E F
W R K R R V S L P I H I Q R T N S
G G N E G S V S Q F T F K G R I H
TTTTCATCAGATGAGCACTTCAGTCCTGCTTGATTATATTTTATTATTAT
AAAAGTAGTCTACTCGTGAAGTCAGGACGAACTAATATAAAATAATAATA
I F I R . A L Q S C L I I F Y Y Y
F S S D E H F S P A . L Y F I I I
F H Q M S T S V L L D Y I L L L
TATTATTATTAATTGAATGGTAAGTTTACAGAATATATAGATATTTTAGT
ATAATAATAATTAACTTACCATTCAAATGTCTTATATATCTATAAAATCA
Y Y Y . L N G K F T E Y I D I L V
I I I N . M V S L Q N I . I F .
L L L L I E W . V Y R I Y R Y F S
TTCAATAAAATATTTTAAAAAATGATAAAGGGAGAAGGTGGATTTGATCT
AAGTTATTTTATAAAATTTTTTACTATTTCCCTCTTCCACCTAAACTAGA
S I K Y F K K . . R E K V D L I
F Q . N I L K N D K G R R W I . S
F N K I F . K M I K G E G G F D L
TAGGATTTTTATTGTGAGCAATAAAAGTCTTTAGTTAGAACTTCCAAAAT
ATCCTAAAAATAACACTCGTTATTTTCAGAAATCAATCTTGAAGGTTTTA
L G F L L . A I K V F S . N F Q N
. D F Y C E Q . K S L V R T S K M
R I F I V S N K S L . L E L P K
GTGTCAAATGAACCCTAATAAGTGGGTTTGGTCTATGGTTACGATGAGAT
CACAGTTTACTTGGGATTATTCACCCAAACCAGATACCAATGCTACTCTA
V S N E P . . V G L V Y G Y D E I
C Q M N P N K W V W S M V T M R
C V K . T L I S G F G L W L R . D

FIG. 16F-1

```
CAGTATTTGTATATAAAAAAATTATCAACTTGATTTTTATTTTTTAACCC
GTCATAAACATATATTTTTTTAATAGTTGAACTAAAAATAAAAAATTGGG
   S   I   C   I   .   K   N   Y   Q   L   D   F   Y   F   L   T
S   V   F   V   Y   K   K   I   I   N   L   I   F   I   F   .   P
 Q   Y   L   Y   I   K   K   L   S   T   .   F   L   F   F   N   P

TTAATAAGTGGACATGATATATCATAATCAAATCATGTGATGTNTGATGA
AATTATTCACCTGTACTATATAGTATTAGTTTAGTACACTACANACTACT
L   N   K   W   T   .   Y   I   I   I   K   S   C   D   V   .   .
 L   I   S   G   H   D   I   S   .   S   N   H   V   M   ?   D   E
   .   .   V   D   M   I   Y   H   N   Q   I   M   .   C   ?   M

GTNATAACATATTTTTTAATAATNAAAATTATNAATAGAGAAAAAATAAG
CANTATTGTATAAAAAATTATTANTTTTAATANTTATCTCTTTTTTATTC
 V   I   T   Y   F   L   I   ?   K   I   ?   N   R   E   K   I   R
   ?   .   H   I   F   .   .   ?   K   L   ?   I   E   K   K   .
S   ?   N   I   F   F   N   N   ?   K   Y   ?   .   R   K   N   K

ATTACTATCCCTTCTATNGATGTNTTATAATATTTTAATCCCTTTCNATA
TAATGATAGGGAAGATANCTACANAATATTATAAAATTAGGGAAAGNTAT
  L   L   S   L   L   ?   M   ?   Y   N   I   L   I   P   F   ?
D   Y   Y   P   F   Y   ?   C   ?   I   I   F   .   S   L   S   I
 I   T   I   P   S   ?   D   V   L   .   Y   F   N   P   F   ?   Y

TAGATTCACGTAGAATAAGAAAGATTATAATCGCATCAAATCAAATACAG
ATCTAAGTGCATCTTATTCTTTCTAATATTAGCGTAGTTTAGTTTATGTC
I   D   S   R   R   I   R   K   I   I   I   A   S   N   Q   I   Q
  .   I   H   V   E   .   E   R   L   .   S   H   Q   I   K   Y   R
   R   F   T   .   N   K   K   D   Y   N   R   I   K   S   N   T

AATNAAATCATGCTTTTGACTTAATTCGAAAAATAATCTTCCTCTCTTGA
TTANTTTAGTACGAAAACTGAATTAAGCTTTTTATTAGAAGGAGAGAACT
 N   ?   I   M   L   L   T   .   F   E   K   .   S   S   S   L   D
   ?   K   S   C   F   .   L   N   S   K   N   N   L   P   L   L
E   ?   N   H   A   F   D   L   I   R   K   I   I   F   L   S   .
```

FIG. 16F-2

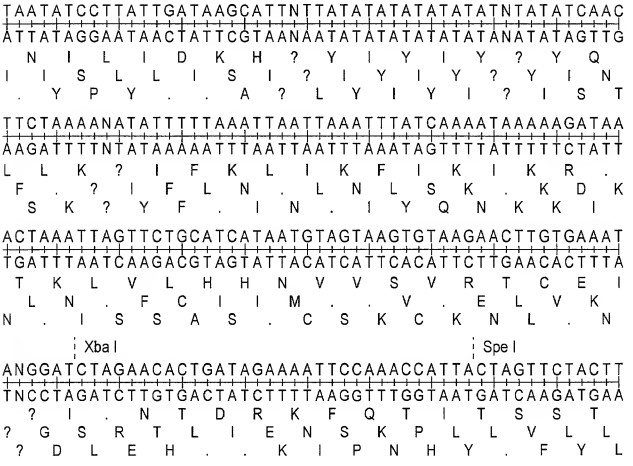


FIG. 16F-3

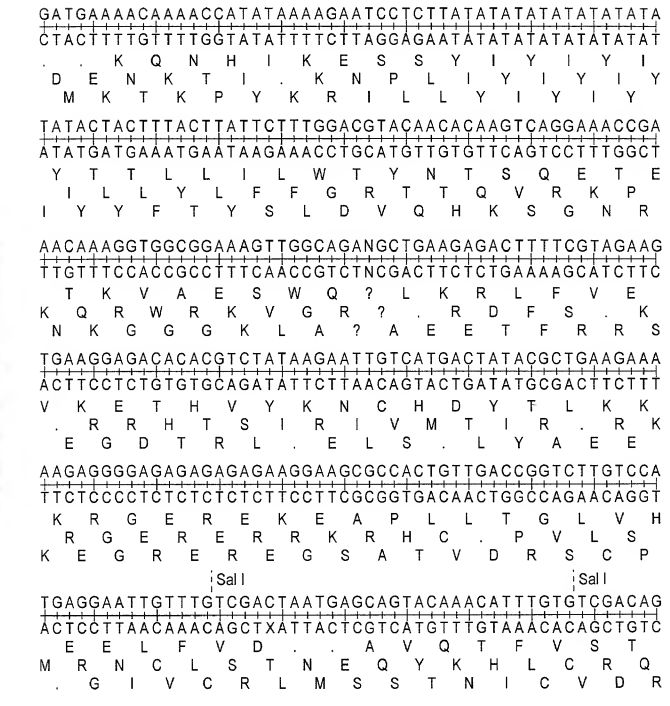


FIG. 16G-1

```
ATGGCAACAAATGAGAAGCGGTATCCCAACACGCAATCTGTAGCCTTTGG
TACCGTTGTTTACTCTTCGCCATAGGGTTGTGCGTTAGACATCGGAAACC
D  G  N  K  .  E  A  V  S  Q  H  A  I  C  S  L  W
 M  A  T  N  E  K  R  Y  P  N  T  Q  S  V  A  F  G
  W  Q  Q  M  R  S  G  I  P  T  R  N  L  .  P  L

TCNCCAGACTTATCCAAAGACTTGCCTCTGCGATTTCCTCATGCGCCTCA
AGNGGTCTGAATAGGTTTCTGAACGGAGACGCTAAAGGAGTACGCGGAGT
 S  P  D  L  S  K  D  L  P  L  R  F  P  H  A  P  H
  ?  Q  T  Y  P  K  T  C  L  C  D  F  L  M  R  L
V  ?  R  L  I  Q  R  L  A  S  A  I  S  S  C  A  S

                Hind III
TCTGTTCCAAAGGAAGCTTCACAGCGGGCAGGAATCCATTTCTCTATATA
AGACAAGGTTTCCTTCGAAGTGTCGCCCGTCCTTAGGTAAAGAGATATAT
  L  F  Q  R  K  L  H  S  G  Q  E  S  I  S  L  Y
I  C  S  K  G  S  F  T  A  G  R  N  P  F  L  Y  I
 S  V  P  K  E  A  S  Q  R  A  G  I  H  F  S  I  .

AGCACCACCTCCCACCCACACCACCACCACCACCACCACTGCTAAGGAGG
TCGTGGTGGAGGGTGGGTGTGGTGGTGGTGGTGGTGACGATTCCTCC
K  H  H  L  P  P  T  P  P  P  P  P  P  L  L  R  R
 S  T  T  S  H  P  H  H  H  H  H  H  H  C  .  G  G
  A  P  P  P  T  H  T  T  T  T  T  T  T  A  K  E

ATGAAGGCCTTGTTGCTGGTCATTTTTACCCTGGCCTCGTCGCTCGGCGC
TACTTCCGGTACAACGACCAGTAAAAATGGGACCGGAGCAGCGAGCCGCG
 M  K  A  L  L  L  V  I  F  T  L  A  S  S  L  G  A
  .  R  P  C  C  W  S  F  L  P  W  P  R  R  S  A
D  E  G  L  V  A  G  H  F  Y  P  G  L  V  A  R  R

CTTCGCCGAGCAATGCGGAAGGCAAGCCGGGGGGGCTCTCTGCCCCGGCG
GAAGCGGCTCGTTACGCCTTCCGTTCGGCCCCCCCGAGAGACGGGGCCGC
  F  A  E  Q  C  G  R  Q  A  G  G  A  L  C  P  G
P  S  P  S  N  A  E  G  K  P  G  G  L  S  A  P  A
 L  R  R  A  M  R  K  A  S  R  G  G  S  L  P  R  R
```

FIG. 16G-2

```
GGCTGTGCTGTAGCCAGTACGGCTGGTGCGGTAACACGGATCCATNCTGC
CCGACACGACATCGGTCATGCCGACCACGCCATTGTGCCTAGGTANGACG
G  L  C  C  S  Q  Y  G  W  C  G  N  T  D  P  ?  C
 G  C  A  V  A  S  T  A  G  A  V  T  R  I  H  ?  A
  A  V  L  .  P  V  R  L  V  R  .  H  G  S  ?  L

GGTCAAGGATGCCANANCCAATGCNCANGCTCCACGCCCTCCCCTTCCAC
CCAGTTCCTACGGTNTNGGTTACGNGTNCGAGGTGCGGGAGGGGAAGGTG
 G  Q  G  C  ?  ?  Q  C  ?  ?  S  T  P  S  P  S  T
  V  K  D  A  ?  ?  N  A  ?  A  P  R  P  P  L  P
R  S  R  M  P  ?  P  M  ?  ?  L  H  A  L  P  F  H

TCCGAGCGGCGGTGGCANNGTTGGCTCGATCATCATCTCCTCCCTCTTCN
AGGCTCGCCGCCACCGTNNCAACCGAGCTAGTAGTAGAGGAGGGAGAAGN
  P  S  G  G  G  ?  V  G  S  I  I  I  S  S  L  F
L  R  A  A  V  A  ?  L  A  R  S  S  S  P  P  S  S
 S  E  R  R  W  ?  ?  W  L  D  H  H  L  L  P  L  ?

AGCAGATGCTGAAGCATCNCANCGACNCAGCCNGCCCCGGCAANGGCTTC
TCGTCTACGACTTCGTAGNGTTGCTGNGTCGGNCGGGGCCGTTNCCGAAG
?  Q  M  L  K  H  ?  ?  D  ?  A  ?  P  G  ?  G  F
 S  R  C  .  S  I  ?  ?  T  Q  P  A  P  A  ?  A  S
  A  D  A  E  A  S  ?  R  ?  S  ?  P  R  Q  ?  L
```

FIG. 16G-3

```
TACNCGTNCACCGCCTTCATCTCCGCCGCCANCTCCTTCANCGGGTTCGG
ATGNGCANGTGGCGGAAGTAGAGGCGGCGGTNGAGGAAGTNGCCCAAGCC
 Y  ?  ?  T  A  F  I  S  A  A  ?  S  F  ?  G  F  G
    T  R  ?  P  P  S  S  P  P  P  ?  P  S  ?  G  S
L  ?  V  H  R  L  H  L  R  R  ?  L  L  ?  R  V  R

GACNACCNGCGACCACTCCACNAATAANANGGANATCNCGGCTTTCTTGG
CTGNTGGNCGCTGGTGAGGTGNTTATTNTNCCTNTAGNGCCGAAAGAACC
   T  T  ?  D  H  S  T  N  ?  ?  ?  I  ?  A  F  L
G  ?  P  A  T  T  P  ?  I  ?  ?  ?  S  R  L  S  W
 D  ?  ?  R  P  L  H  ?  .  ?  G  ?  ?  G  F  L  G

TNCNGACNTCTCNCGAGACNACANGTAATCCNTNCNTCTCCCGAGGCTCG
ANGNCTGNAGAGNGCTCTGNTGTNCATTAGGNANGNAGAGGGCTCCGAGC
V  ?  T  S  ?  E  T  T  ?  N  P  ?  ?  S  R  G  S
 ?  ?  ?  L  ?  R  ?  ?  V  I  ?  ?  S  P  E  A  R
   ?  D  ?  S  R  D  ?  ?  .  S  ?  ?  L  P  R  L

TCTNCAGNTTATNGATAGACANCTNAATGCATTGGGTTNGGCACGTGGGT
AGANGTCNAATANCTATCTGTNGANTTACGTAACCCAANCCGTGCACCCA
 S  ?  ?  Y  ?  .  T  ?  ?  C  I  G  ?  G  T  W  V
    L  Q  ?  ?  D  R  ?  L  N  A  L  G  ?  A  R  G
V  ?  ?  L  ?  I  D  ?  ?  M  H  W  V  ?  H  V  G

GGTCCACCGTGCCCNATGGCCNTTCGCGTGGGGTTACTGCTTCGTCCAGN
CCAGGTGGCACGGGNTACCGGNAAGCGCACCCCAATGACGAAGCAGGTCN
   V  H  R  A  ?  W  P  F  A  W  G  Y  C  F  V  Q
W  S  T  V  P  ?  G  ?  S  R  G  V  T  A  S  S  ?
 G  P  P  C  P  M  A  ?  R  V  G  L  L  L  R  P  ?

AACAGAACCCTCATCGGACTACTGCGTCGCCAGCTCGCANTGGCCGTGCG
TTGTCTTGGGAGTAGCCTGATGACGCAGCGGTCGAGCGTNACCGGCACGC
?  Q  N  P  H  R  T  T  A  S  P  A  R  ?  G  R  A
 N  R  T  L  I  G  L  L  R  R  Q  L  A  ?  A  V  R
   T  E  P  S  S  D  Y  C  V  A  S  S  ?  W  P  C
```

FIG. 16H-1

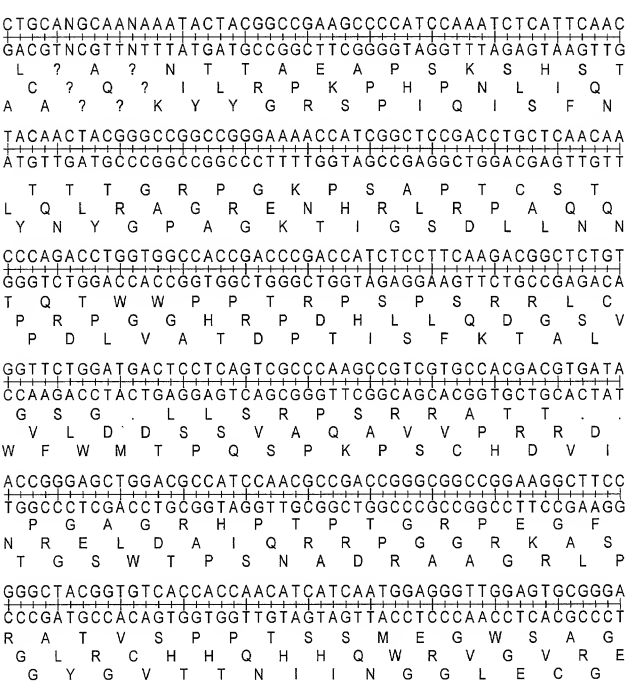

CTGCANGCAANAAATACTACGGCCGAAGCCCCATCCAAATCTCATTCAAC
GACGTNCGTTNTTTATGATGCCGGCTTCGGGGTAGGTTTAGAGTAAGTTG
L ? A ? N T T A E A P S K S H S T
C ? Q ? I L R P K P H P N L I Q
A A ? ? K Y Y G R S P I Q I S F N
TACAACTACGGGCCGGCCGGGAAAACCATCGGCTCCGACCTGCTCAACAA
ATGTTGATGCCCGGCCGGCCCTTTTGGTAGCCGAGGCTGGACGAGTTGTT
T T T G R P G K P S A P T C S T
L Q L R A G R E N H R L R P A Q Q
Y N Y G P A G K T I G S D L L N N
CCCAGACCTGGTGGCCACCGACCCGACCATCTCCTTCAAGACGGCTCTGT
GGGTCTGGACCACCGGTGGCTGGGCTGGTAGAGGAAGTTCTGCCGAGACA
T Q T W W P P T R P S P S R R L C
P R P G G H R P D H L L Q D G S V
P D L V A T D P T I S F K T A L
GGTTCTGGATGACTCCTCAGTCGCCCAAGCCGTCGTGCCACGACGTGATA
CCAAGACCTACTGAGGAGTCAGCGGGTTCGGCAGCACGGTGCTGCACTAT
G S G . L L S R P S R R A T T . .
V L D D S S V A Q A V V P R R D
W F W M T P Q S P K P S C H D V I
ACCGGGAGCTGGACGCCATCCAACGCCGACCGGGCGGCCGGAAGGCTTCC
TGGCCCTCGACCTGCGGTAGGTTGCGGCTGGCCCGCCGGCCTTCCGAAGG
P G A G R H P T P T G R P E G F
N R E L D A I Q R R P G G R K A S
T G S W T P S N A D R A A G R L P
GGGCTACGGTGTCACCACCAACATCATCAATGGAGGGTTGGAGTGCGGGA
CCCGATGCCACAGTGGTGGTTGTAGTAGTTACCTCCCAACCTCACGCCCT
R A T V S P P T S S M E G W S A G
G L R C H H Q H H Q W R V G V R E
G Y G V T T N I I N G G L E C G

FIG. 16H-2

```
AAGGGTCCGATGCCAGGGTGGCGGATAGGATCGGCTTCTACAANAGGTAC
TTCCCAGGCTACGGTCCCACCGCCTATCCTAGGCGAAGATGTTNTCCATG
 K  G  P  M  P  G  W  R  I  G  S  A  S  T  ?  G  T
  R  V  R  C  Q  G  G  G  .  D  R  L  L  Q  ?  V
K  G  S  D  A  R  V  A  D  R  I  G  F  Y  ?  R  Y

TGCGACTTGCTGGGGGTGAGCTACGGAGACAACTTGGACTGCTACAACCA
ACGCTGAACGACCCCCACTCGATGCCTCTGTTGAACCTGACGATGTTGGT
  A  T  C  W  G  .  A  T  E  T  T  W  T  A  T  T
L  R  L  A  G  G  E  L  R  R  Q  L  G  L  L  Q  P
 C  D  L  L  G  V  S  Y  G  D  N  L  D  C  Y  N  ?

NAGTCCCTTTACTTANTCCGATACTATGTGCGAATCCATGTAATAACGCA
NTCAGGGAAATGAATNAGGCTATGATACACGCTTAGGTACATTATTGCGT
? V P L L ? R I L C A N P C N N A
 ? S L Y L ? R Y Y V R I H V I T Q
  S  P  F  T  *  S  D  T  M  C  E  S  M  .  .  R

ATAAACGCTACTGCTGAAATAGCGACTCCGTGAGTTGATTGTAGAAGTTG
TATTTGCGATGACGACTTTATCGCTGAGGCACTCAACTAACATCTTCAAC
 I  N  A  T  A  E  I  A  T  P  .  V  D  C  R  S  C
  .  T  L  L  L  K  .  R  L  R  E  L  I  V  E  V
N  K  R  Y  C  .  N  S  D  S  V  S  .  L  .  K  L

                                    POLY A
CGGAGGAAATCTTCAATAAAAGCTAAGCTGAACAAGTTCATGGCCCTCAA
GCCTCCTTTAGAAGTTATTTTCGATTCGACTTGTTCAAGTACCGGGAGTT
  G  G  N  L  Q  .  K  L  S  .  T  S  S  W  P  S
A  E  E  I  F  N  K  S  .  A  E  Q  V  H  G  P  Q
 R  R  K  S  S  I  K  A  K  L  N  K  F  M  A  L  N

TCATCGTTGATCGTCGTCAGATGCATCCATCAAATGTCTTGGAGTNAGTN
AGTAGCAACTAGCAGCAGTCTACGTAGGTAGTTTACAGAACCTCANTCAN
I  I  V  D  R  R  Q  M  H  P  S  N  V  L  E  ?  V
 S  S  L  I  V  V  R  C  I  H  Q  M  S  W  S  ?  ?
  H  R  .  S  S  S  D  A  S  I  K  C  L  G  V  S
```

FIG. 16H-3

```
AATGCGTTTTCNATCGGTAAATTGAAGATGTTAGAATAAATAAAATTATT
TTACGCAAAAGNTAGCCATTTAACTTCTACAATCTTATTTATTTTAATAA
 N  A  ?  S  I  G  K  L  K  M  L  E  .  I  K  L  F
  M  R  ?  ?  S  V  N  .  R  C  .  N  K  .  N  Y
?  C  V  F  ?  R  .  I  E  D  V  R  I  N  K  I  I

TATTTTTTATAATTATAAATATTTTAATATATTTTTTAATCTTAAAGATC
ATAAAAAATATTAATATTTATAAAATTATATAAAAAATTAGAATTTCTAG
  I  F  Y  N  Y  K  Y  F  N  I  F  F  N  L  K  D
L  F  F  I  I  I  N  I  L  I  Y  F  L  I  L  K  I
 Y  F  L  .  L  .  I  F  .  Y  I  F  .  S  .  R  S

CTAAAAAATCTNATTATAAGGATTTTATATATGGATTGGGATACTAANAA
GATTTTTTAGANTAATATTCCTAAAATATATACCTAACCCTATGATTNTT
P  K  K  S  ?  Y  K  D  F  I  Y  G  L  G  Y  .  ?
 L  K  N  L  I  I  R  I  L  Y  M  D  W  D  T  ?  K
  .  K  I  ?  L  .  G  F  Y  I  W  I  G  I  L  ?

                                       BamH I
AANTTNATTATNAAAATTAATATACTTTTAATCTTAAGGATCCTAAAAAA
TTNAANTAATANTTTTAATTATATGAAAATTAGAATTCCTAGGATTTTTT
 ?  ?  I  ?  K  I  N  I  L  L  I  L  R  I  L  K  K
  ?  ?  L  ?  K  L  I  Y  F  .  S  .  G  S  .  K
K  ?  ?  Y  ?  N  .  Y  T  F  N  L  K  D  P  K  K

ACATAATTATAAGGATTTTCTATATGGATNGGGATACTAACAANATNTAA
TGTATTAATATTCCTAAAAGATATACCTANCCCTATGATTGTTNTANATT
  H  N  Y  K  D  F  L  Y  G  ?  G  Y  .  Q  ?  ?
N  I  I  I  R  I  F  Y  M  D  ?  D  T  N  ?  ?  .
 T  .  L  .  G  F  S  I  W  ?  G  I  L  T  ?  ?  N

TTGTAAAAATTTNAATATAAAATTGTTAAATCTAAAAATTAAAATACTAA
AACATTTTTAAANTTATATTTTAACAATTTAGATTTTTAATTTTATGATT
I  V  K  I  ?  I  .  N  C  .  I  .  K  L  K  Y  .
 L  .  K  F  ?  Y  K  I  V  K  S  K  N  .  N  T  K
  C  K  N  ?  N  I  K  L  L  N  L  K  I  K  I  L
```

FIG. 16J-1

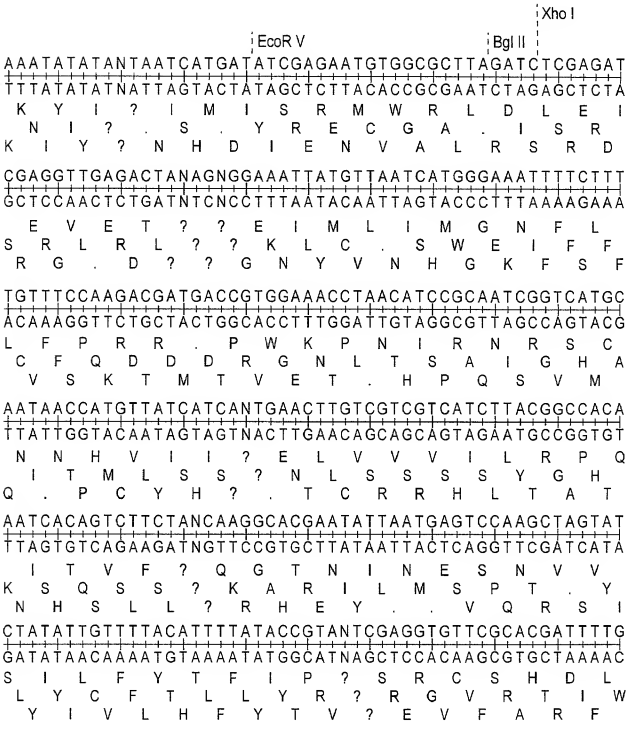

Xho I
EcoR V
Bgl II
AAATATATANTAATCATGATATCGAGAATGTGGCGCTTAGATCTCGAGAT
TTTATATATNATTAGTACTATAGCTCTTACACCGCGAATCTAGAGCTCTA
K Y I ? I M I S R M W R L D L E I
N I ? . S . Y R E C G A . I S R
K I Y ? N H D I E N V A L R S R D
CGAGGTTGAGACTANAGNGGAAATTATGTTAATCATGGGAAATTTTCTTT
GCTCCAACTCTGATNTCNCCTTTAATACAATTAGTACCCTTTAAAAGAAA
E V E T ? ? E I M L I M G N F L
S R L R L ? ? K L C . S W E I F F
R G . D ? ? G N Y V N H G K F S F
TGTTTCCAAGACGATGACCGTGGAAACCTAACATCCGCAATCGGTCATGC
ACAAAGGTTCTGCTACTGGCACCTTTGGATTGTAGGCGTTAGCCAGTACG
L F P R R . P W K P N I R N R S C
C F Q D D D R G N L T S A I G H A
V S K T M T V E T . H P Q S V M
AATAACCATGTTATCATCANTGAACTTGTCGTCGTCATCTTACGGCCACA
TTATTGGTACAATAGTAGTNACTTGAACAGCAGCAGTAGAATGCCGGTGT
N N H V I I ? E L V V V I L R P Q
I T M L S S ? N L S S S S Y G H
Q . P C Y H ? . T C R R H L T A T
AATCACAGTCTTCTANCAAGGCACGAATATTAATGAGTCCAAGCTAGTAT
TTAGTGTCAGAAGATNGTTCCGTGCTTATAATTACTCAGGTTCGATCATA
I T V F ? Q G T N I N E S N V V
K S Q S S ? K A R I L M S P T . Y
N H S L L ? R H E Y . . V Q R S I
CTATATTGTTTTACATTTTATACCGTANTCGAGGTGTTCGCACGATTTTG
GATATAACAAAATGTAAAATATGGCATNAGCTCCACAAGCGTGCTAAAAC
S I L F Y T F I P ? S R C S H D L
L Y C F T L L Y R ? R G V R T I W
Y I V L H F Y T V ? E V F A R F

FIG. 16J-2

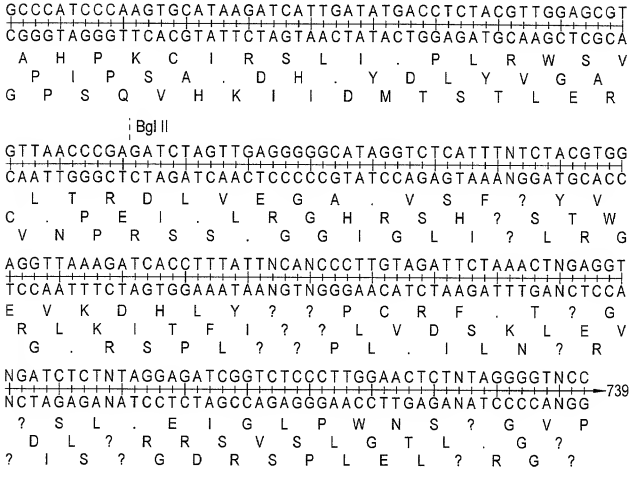

GCCCATCCCAAGTGCATAAGATCATTGATATGACCTCTACGTTGGAGCGT
CGGGTAGGGTTCACGTATTCTAGTAACTATACTGGAGATGCAAGCTCGCA
A H P K C I R S L I . P L R W S V
P I P S A . D H . Y D L Y V G A
G P S Q V H K I I D M T S T L E R
Bgl II
GTTAACCCGAGATCTAGTTGAGGGGGCATAGGTCTCATTTNTCTACGTGG
CAATTGGGCTCTAGATCAACTCCCCCGTATCCAGAGTAAANGGATGCACC
L T R D L V E G A . V S F ? Y V
C . P E I . L R G H R S H ? S T W
V N P R S S . G G I G L I ? L R G
AGGTTAAAGATCACCTTTATTNCANCCCTTGTAGATTCTAAACTNGAGGT
TCCAATTTCTAGTGGAAATAANGTNGGGAACATCTAAGATTTGANCTCCA
E V K D H L Y ? ? P C R F . T ? G
R L K I T F I ? ? L V D S K L E V
G . R S P L ? ? P L . I L N ? R
NGATCTCTNTAGGAGATCGGTCTCCCTTGGAACTCTNTAGGGGTNCC
NCTAGAGANATCCTCTAGCCAGAGGGAACCTTGAGANATCCCCANGG
? S L . E I G L P W N S ? G V P
D L ? R R S V S L G T L . G ?
? I S ? G D R S P L E L ? R G ?
739

FIG. 16J-3

```
BamH I
GGATCCCAACTTTTAGGAATGGATCTTAAAATTTTAGTTATAAGTTCAAA
CCTAGGGTTGAAAATCCTTACCTAGAATTTTAAAATCAATATTCAAGTTT
 G  S  Q  L  L  G  M  D  L  K  I  L  V  I  S  S  K
  D  P  N  F  .  E  W  I  L  K  F  .  L  .  V  Q
R  I  P  T  F  R  N  G  S  K  N  F  S  Y  K  F  K

GTTAGAAAAATCTTTACCAAGAGCTTTGAGTCCATTGATGACATCCGTGA
CAATCTTTTTAGAAATGGTTCTCGAAACTCAGGTAACTACTGTAGGCACT
  L  E  K  S  L  P  R  A  L  S  P  L  M  T  S  V
S  .  K  N  L  Y  Q  E  L  .  V  H  .  .  H  P  .
 V  R  K  I  F  T  K  S  F  E  S  I  D  D  I  R  E

AACGGTGTACATGTCTCCGATGGACTCACTTGGTTTCATTCGGAAAAGTT
TTGCCACATGTACAGAGGCTACCTGAGTGAACCAAAGTAAGCCTTTTCAA
K  R  C  T  C  L  R  W  T  H  L  V  S  F  G  K  V
 N  G  V  H  V  S  D  G  L  T  W  F  H  S  E  K  F
  T  V  Y  M  S  P  M  D  S  L  G  F  I  R  K  S

CGAAAGAGTGCATAAGAATATTGATTTTGGATTCTTTCACTCGGTTGGTG
GCTTTCTCACGTATTCTTATAACTAAAACCTAAGAAAGTGAGCCAACCAC
 R  K  S  A  .  E  Y  .  F  W  I  L  S  L  G  W  C
  E  R  V  H  K  N  I  D  F  G  F  F  H  S  V  G
S  K  E  C  I  R  I  L  I  L  D  S  F  T  R  L  V

CCTTCATGAGTGACCTCAAGAGTCCTCCAAATATCAAAAGCCGAATCACA
GGAAGTACTCACTGGAGTTCTCAGGAGGTTTATAGTTTTCGGCTTAGTGT
  L  H  E  .  P  Q  E  S  S  K  Y  Q  K  P  N  H
A  F  M  S  D  L  K  S  P  P  N  I  K  S  R  I  T
 P  S  .  V  T  S  R  V  L  Q  I  S  K  A  E  S  Q

                EcoR I
AATTGAAATGTGATTGAATTCATTTTTGTCTAATGCACAAAACAGGGCAT
TTAACTTTACACTAACTTAAGTAAAAACAGATTACGTGTTTTGTCCCGTA
K  L  K  C  D  .  I  H  F  C  L  M  H  K  T  G  H
 N  .  N  V  I  E  F  I  F  V  .  C  T  K  Q  G  I
  I  E  M  .  L  N  S  F  L  S  N  A  Q  N  R  A
```

FIG. 17A-1

```
TCATAGCCTTTGTGTTTAAAGCAAAAACATTCTTCTCCGATTCATCCCAT
AGTATCGGAAACACAAATTTCGTTTTTGTAAGAAGAGGCTAAGTAGGGTA
 S  .  P  L  C  L  K  Q  K  H  S  S  P  I  H  P  I
  H  S  L  C  V  .  S  K  N  I  L  L  R  F  I  P
.  I  A  F  V  F  K  A  K  T  F  F  S  D  S  S  H

TCGCTCATCGGAAGAGAAAATTTTTGAAATCCATTTTCGACAATAGACCA
AGCGAGTAGCCTTCTCTTTTAAAAACTTTAGGTAAAAGCTGTTATCTGGT
  R  S  S  E  E  K  I  F  E  I  H  F  R  Q  .  T
F  A  H  R  K  R  K  F  L  K  S  I  F  D  N  R  P
 S  L  I  G  R  E  N  F  .  N  P  F  S  T  I  D  Q

            Nco I
AAGCTCGAAATCCATGGAAATGAGGAAGATCCTCATATGAGTTTTCCAAT
TTCGAGCTTTAGGTACCTTTACTCCTTCTAGGAGTATACTCAAAAGGTTA
K  A  R  N  P  W  K  .  G  R  S  S  Y  E  F  S  N
 K  L  E  I  H  G  N  E  E  D  P  H  M  S  F  P  I
  S  S  K  S  M  XE  M  R  K  I  L  I  .  V  F  Q

ACATGTAATTCGACTCATTAAACATAGGTGGATGTGTAATGAAATGACCC
TGTACATTAAGCTGATGAATTTGTATCCACCTACACATTACTTTACTGGG
 T  C  N  S  T  H  .  T  .  V  D  V  .  .  N  D  P
  H  V  I  R  L  I  K  H  R  W  M  C  N  E  M  T
Y  M  .  F  D  S  L  N  I  G  G . C  V  M  K  .  P

TCATGCSCTATCTCTCTTGGGTATTAAACCAAATATGAGAGTGAGCCTTG
AGTACGSGATAGAGAGAACCCATAATTTGGTTTATACTCTCACTCGGAAC
  H  A  L  S  L  L  G  I  K  P  N  M  R  V  S  L
L  M  ?  Y  L  S  W  V  L  N  Q  I  .  E  .  A  L
 S  C  ?  I  S  L  G  Y  .  T  K  Y  E  S  E  P  C

CTCTGATACCAATTGTTAGGATCAGAGTGGCACTAAGAGAGGGGGGGAGA
GAGACTATGGTTAACAATCCTAGTCTCACCGTGATTCTCTCCCCCCCTCT
A  L  I  P  I  V  R  I  R  V  A  L  R  E  G  G  S
 L  .  Y  Q  L  L  G  S  E  W  H  .  E  R  G · G  V
  S  D  T  N  C  .  D  Q  S  G  T  K  R  G  G  E
```

FIG. 17A-2

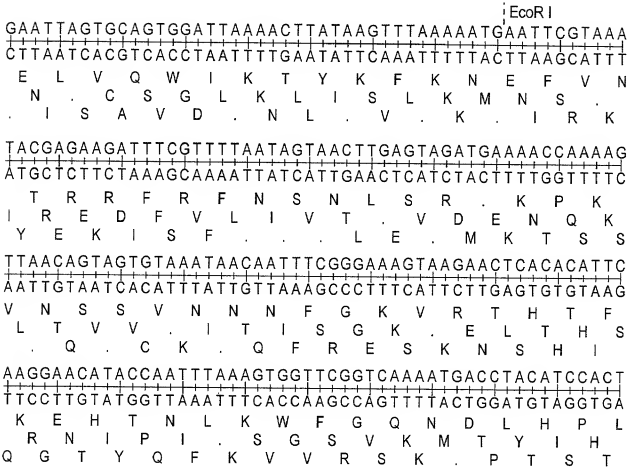

EcoR I
GAATTAGTGCAGTGGATTAAAACTTATAAGTTTAAAAATGAATTCGTAAA
CTTAATCACGTCACCTAATTTTGAATATTCAAATTTTTACTTAAGCATTT
E L V Q W I K T Y K F K N E F V N
N . C S G L K L I S L K M N S .
. I S A V D . N L . V . K . I R K
TACGAGAAGATTTCGTTTTAATAGTAACTTGAGTAGATGAAAACCAAAAG
ATGCTCTTCTAAAGCAAAATTATCATTGAACTCATCTACTTTTGGTTTTC
T R R F R F N S N L S R . K P K
I R E D F V L I V T . V D E N Q K
Y E K I S F . . . L E . M K T S S
TTAACAGTAGTGTAAATAACAATTTCGGGAAAGTAAGAACTCACACATTC
AATTGTAATCACATTTATTGTTAAAGCCCTTTCATTCTTGAGTGTGTAAG
V N S S V N N N F G K V R T H T F
L T V V . I T I S G K . E L T H S
. Q . C K . Q F R E S K N S H I
AAGGAACATACCAATTTAAAGTGGTTCGGTCAAAATGACCTACATCCACT
TTCCTTGTATGGTTAAATTTCACCAAGCCAGTTTTACTGGATGTAGGTGA
K E H T N L K W F G Q N D L H P L
R N I P I . S G S V K M T Y I H
Q G T Y Q F K V V R S K . P T S T

FIG. 17A-3

```
TGTGAAGCCTTCTTCGAAGAGGCTCCCAACTTCCACTAGCAAATCACTTT
ACACTTCGGAAGAAGCTTCTCCGAGGGTTGAAGGTGATCGTTTAGTGAAA
  V  K  P  S  S  K  R  L  P  T  S  T  S  K  S  L
L  .  S  L  L  R  R  G  S  Q  L  P  L  A  N  H  F
  C  E  A  F  F  E  E  A  P  N  F  H  .  Q  I  T  L

GAAGGGGAAGGACAAATACCTCTCTTACNACCTTTTACAATGGTTCATAC
CTTCCCCTTCCTGTTTATGGAGAGAATGNTGGAAAATGTTACCAAGTATG
  .  R  G  R  T  N  T  S  L  T  T  F  Y  N  G  S  Y
  E  G  E  G  Q  I  P  L  L  ?  P  F  T  M  V  H  T
    K  G  K  D  K  Y  L  S  Y  ?  L  L  Q  W  F  I

TCTTACAAATTTTCAACGAGAAAGAAGGAGGTGAACATGCAAGCAATTGA
AGAATGTTTAAAAGTTGCTCTTTCTTCCTCCACTTGTACGTTCGTTAACT
  S  Y  K  F  S  T  R  K  K  E  V  N  M  Q  A  I  E
    L  T  N  F  Q  R  E  R  R  R  .  T  C  K  Q  L
L  L  Q  I  F  N  E  K  E  G  G  E  H  A  S  N  .

AAACAAGACTTGCTAAAGACTTTGCTAAGGCTTTTTTTCTCAATCTATTG
TTTGTTCTGAACGATTTCTGAAACGXTTCCGAAAAAAAGAGTTAGATAAC
  N  K  T  C  .  R  L  C  .  G  F  F  S  Q  S  I
K  T  R  L  A  K  D  F  A  K  A  F  F  L  N  L  L
  K  Q  D  L  L  R  T  L  L  R  L  F  F  S  I  Y  C

CTTCTCAAAAGTTGTATTCTCTGCTGAGAATTGAGGGGTATTTATAGACC
GAAGAGTTTTCAACATAAGAGACGACTCTTAACTCCCCATAAATATCTGG
A  S  Q  K  L  Y  S  L  L  R  I  E  G  Y  L  .  T
  L  L  K  S  C  I  L  C  .  E  L  R  G  I  Y  R  P
    F  S  K  V  V  F  S  A  E  N  .  G  V  F  I  D

CCAAGAGGATTTAAATTTGGGCTCCAAATTTCGAATGCTCTTGGGTTCCC
GGTTCTCCTAAATTTAAACCCGAGGTTTAAAGCTTACGAGAACCCAAGGG
  P  R  G  F  K  F  G  L  Q  I  S  N  A  L  G  F  P
    Q  E  D  L  N  L  G  S  K  F  R  M  L  L  G  S
P  K  R  I  .  I  W  A  P  N  F  E  C  S  W  V  P
```

FIG. 17B-1

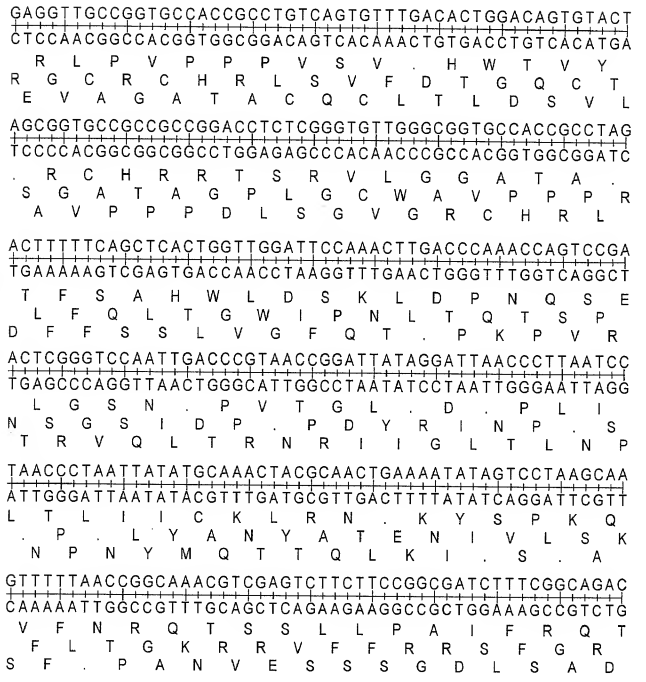

GAGGTTGCCGGTGCCACCGCCTGTCAGTGTTTGACACTGGACAGTGTACT
CTCCAACGGCCACGGTGGCGGACAGTCACAAACTGTGACCTGTCACATGA
R L P V P P P V S V . H W T V Y
R G C R C H R L S V F D T G Q C T
E V A G A T A C Q C L T L D S V L
AGCGGTGCCGCCGCCGGACCTCTCGGGTGTTGGGCGGTGCCACCGCCTAG
TCCCCACGGCGGCGGCCTGGAGAGCCCACAACCCGCCACGGTGGCGGATC
. R C H R R T S R V L G G A T A .
S G A T A G P L G C W A V P P P R
A V P P P D L S G V G R C H R L
ACTTTTTCAGCTCACTGGTTGGATTCCAAACTTGACCCAAACCAGTCCGA
TGAAAAAGTCGAGTGACCAACCTAAGGTTTGAACTGGGTTTGGTCAGGCT
T F S A H W L D S K L D P N Q S E
L F Q L T G W I P N L T Q T S P
D F F S S L V G F Q T . P K P V R
ACTCGGGTCCAATTGACCCGTAACCGGATTATAGGATTAACCCTTAATCC
TGAGCCCAGGTTAACTGGGCATTGGCCTAATATCCTAATTGGGAATTAGG
L G S N . P V T G L . D . P L I
N S G S I D P . P D Y R I N P . S
T R V Q L T R N R I I G L T L N P
TAACCCTAATTATATGCAAACTACGCAACTGAAAATATAGTCCTAAGCAA
ATTGGGATTAATATACGTTTGATGCGTTGACTTTTATATCAGGATTCGTT
L T L I I C K L R N . K Y S P K Q
. P . L Y A N Y A T E N I V L S K
N P N Y M Q T T Q L K I . S . A
GTTTTTAACCGGCAAACGTCGAGTCTTCTTCCGGCGATCTTTCGGCAGAC
CAAAAATTGGCCGTTTGCAGCTCAGAAGAAGGCCGCTGGAAAGCCGTCTG
V F N R Q T S S L L P A I F R Q T
F L T G K R R V F F R R S F G R
S F . P A N V E S S S G D L S A D

FIG. 17B-2

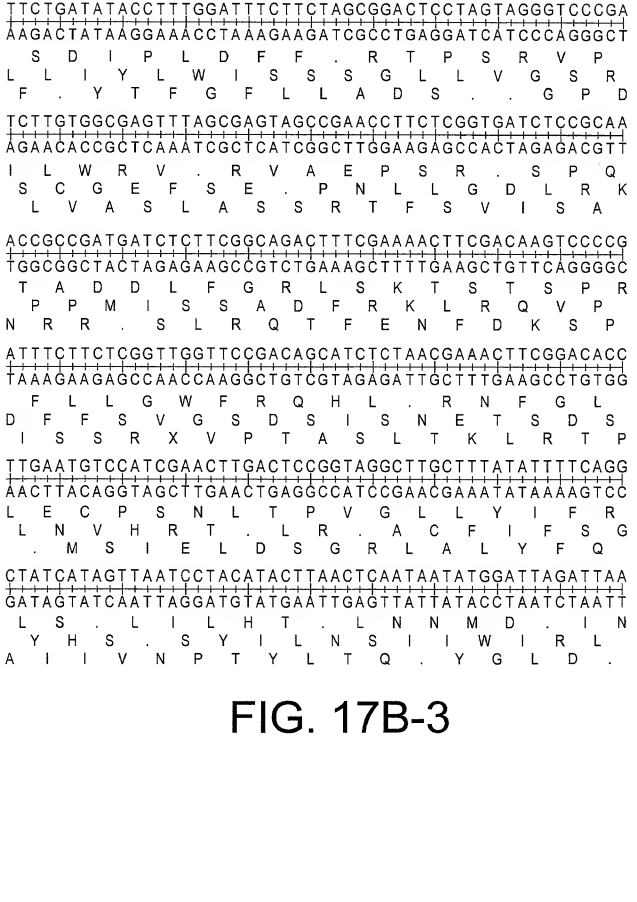

TTCTGATATACCTTTGGATTTCTTCTAGCGGACTCCTAGTAGGGTCCCGA
AAGACTATAAGGAAACCTAAAGAAGATCGCCTGAGGATCATCCCAGGGCT
S D I P L D F F . R T P S R V P
L L I Y L W I S S S G L L V G S R
F . Y T F G F L L A D S . . G P D
TCTTGTGGCGAGTTTAGCGAGTAGCCGAACCTTCTCGGTGATCTCCGCAA
AGAACACCGCTCAAATCGCTCATCGGCTTGGAAGAGCCACTAGAGACGTT
I L W R V . R V A E P S R . S P Q
S C G E F S E . P N L L G D L R K
L V A S L A S S R T F S V I S A
ACCGCCGATGATCTCTTCGGCAGACTTTCGAAAACTTCGACAAGTCCCCG
TGGCGGCTACTAGAGAAGCCGTCTGAAAGCTTTTGAAGCTGTTCAGGGGC
T A D D L F G R L S K T S T S P R
P P M I S S A D F R K L R Q V P
N R R . S L R Q T F E N F D K S P
ATTTCTTCTCGGTTGGTTCCGACAGCATCTCTAACGAAACTTCGGACACC
TAAAGAAGAGCCAACCAAGGCTGTCGTAGAGATTGCTTTGAAGCCTGTGG
F L L G W F R Q H L . R N F G L
D F F S V G S D S I S N E T S D S
I S S R X V P T A S L T K L R T P
TTGAATGTCCATCGAACTTGACTCCGGTAGGCTTGCTTTATATTTTCAGG
AACTTACAGGTAGCTTGAACTGAGGCCATCCGAACGAAATATAAAAGTCC
L E C P S N L T P V G L L Y I F R
L N V H R T . L R . A C F I F S G
. M S I E L D S G R L A L Y F Q
CTATCATAGTTAATCCTACATACTTAACTCAATAATATGGATTAGATTAA
GATAGTATCAATTAGGATGTATGAATTGAGTTATTATACCTAATCTAATT
L S . L I L H T . L N N M D . I N
Y H S . S Y I L N S I I W I R L
A I I V N P T Y L T Q . Y G L D .

FIG. 17B-3

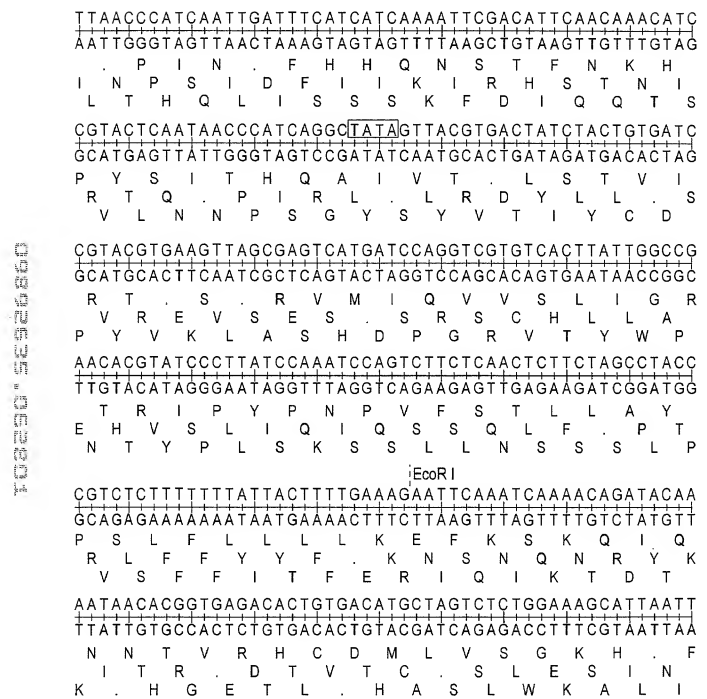

TTAACCCATCAATTGATTTCATCATCAAAATTCGACATTCAACAAACATC
AATTGGGTAGTTAACTAAAGTAGTAGTTTTAAGCTGTAAGTTGTTTGTAG
. P I N . F H H Q N S T F N K H
I N P S I D F I I K I R H S T N I
L T H Q L I S S S K F D I Q Q T S
CGTACTCAATAACCCATCAGGCTATAGTTACGTGACTATCTACTGTGATC
GCATGAGTTATTGGGTAGTCCGATATCAATGCACTGATAGATGACACTAG
P Y S I T H Q A I V T . L S T V I
R T Q . P I R L . L R D Y L L . S
V L N N P S G Y S Y V T I Y C D
CGTACGTGAAGTTAGCGAGTCATGATCCAGGTCGTGTCACTTATTGGCCG
GCATGCACTTCAATCGCTCAGTACTAGGTCCAGCACAGTGAATAACCGGC
R T . S . R V M I Q V V S L I G R
V R E V S E S . S R S C H L L A
P Y V K L A S H D P G R V T Y W P
AACACGTATCCCTTATCCAAATCCAGTCTTCTCAACTCTTCTAGCCTACC
TTGTACATAGGGAATAGGTTTAGGTCAGAAGAGTTGAGAAGATCGGATGG
T R I P Y P N P V F S T L L A Y
E H V S L I Q I Q S S Q L F . P T
N T Y P L S K S S L L N S S S L P
EcoR I
CGTCTCTTTTTTTATTACTTTTGAAAGAATTCAAATCAAAACAGATACAA
GCAGAGAAAAAAATAATGAAAACTTTCTTAAGTTTAGTTTTGTCTATGTT
P S L F L L L L K E F K S K Q I Q
R L F F Y Y F . K N S N Q N R Y K
V S F F I T F E R I Q I K T D T
AATAACACGGTGAGACACTGTGACATGCTAGTCTCTGGAAAGCATTAATT
TTATTGTGCCACTCTGTGACACTGTACGATCAGAGACCTTTCGTAATTAA
N N T V R H C D M L V S G K H . F
I T R . D T V T C . S L E S I N
K . H G E T L . H A S L W K A L I

FIG. 17C-1

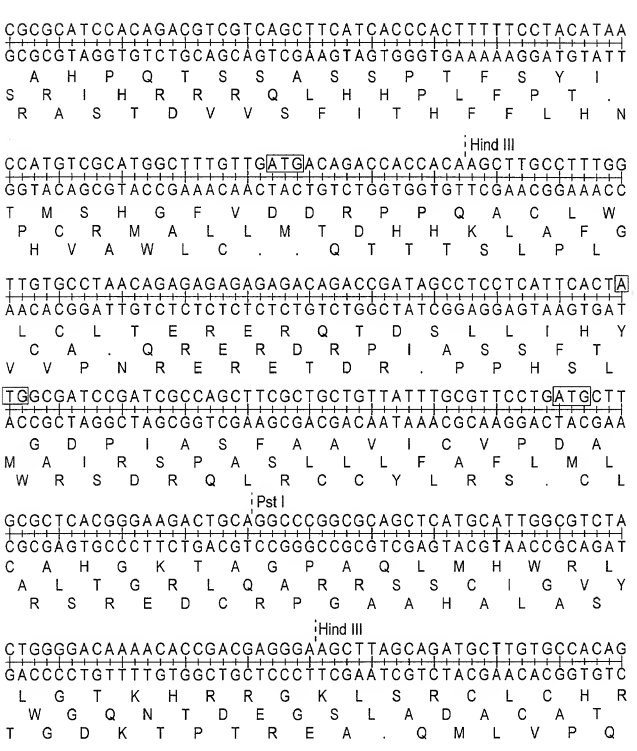


FIG. 17C-2


GCAACTACGAATACGTGAACATCGCCACCCTTTTCAAGTTTGGCATGGGC
CGTTGATGCTTATGCACTTGTAGCGGTGGGAAAAGTTCAAACCGTACCCG
Q L R I R E H R H P F Q V W H G
G N Y E Y V N I A T L F K F G M G
A T T N T . T S P P F S S L A W A
CAAACTCCAGAGATCAACCTCGCCGGCCACTGTGACCCTCGGAACAACGG
GTTTGAGGTCTCTAGTTGGAGCGGCCGGTGACACTGGGAGCCTTGTTGCC
P N S R D Q P R R P L . P S E Q R
Q T P E I N L A G H C D P R N N G
D L Q R S T S P A T V T L G T T
CTGCGCGCGCTTGAGCAGCGAAATCCAGTCCTGCCAGGAGCGTGGCGTCA
GACGCGCGCGAACTCGTCGCTTTAGGTCAGGACGGTCCTCGCACCGCAGT
L R A L E Q R N P V L P G A W R Q
C A R L S S E I Q S C Q E R G V
A A R A . A A K S S P A R S V A S
AGGTGATGCTCTCCATCGGAGGTGGCGGGTCTTATGGCCTGAGTTCCACC
TCCACTACGAGAGGTAGCCTCCACCGCCCAGAATACCGGACTCAAGGTGG
G D A L H R R W R V L W P E F H
K V M L S I G G G G S Y G L S S T
R . C S P S E V A G L M A . V P P

FIG. 17C-3

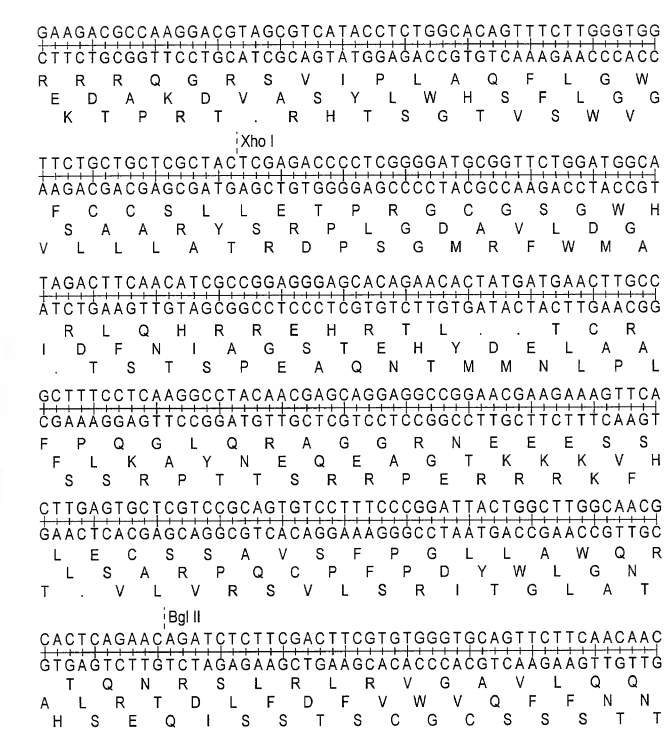

GAAGACGCCAAGGACGTAGCGTCATACCTCTGGCACAGTTTCTTGGGTGG
CTTCTGCGGTTCCTGCATCGCAGTATGGAGACCGTGTCAAAGAACCCACC
R R R Q G R S V I P L A Q F L G W
E D A K D V A S Y L W H S F L G G
K T P R T . R H T S G T V S W V
Xho I
TTCTGCTGCTCGCTACTCGAGACCCCTCGGGGATGCGGTTCTGGATGGCA
AAGACGACGAGCGATGAGCTGTGGGGAGCCCCTACGCCAAGACCTACCGT
F C C S L L E T P R G C G S G W H
S A A R Y S R P L G D A V L D G
V L L L A T R D P S G M R F W M A
TAGACTTCAACATCGCCGGAGGGAGCACAGAACACTATGATGAACTTGCC
ATCTGAAGTTGTAGCGGCCTCCCTCGTGTCTTGTGATACTACTTGAACGG
R L Q H R R E H R T L . . T C R
I D F N I A G S T E H Y D E L A A
. T S T S P E A Q N T M M N L P L
GCTTTCCTCAAGGCCTACAACGAGCAGGAGGCCGGAACGAAGAAAGTTCA
CGAAAGGAGTTCCGGATGTTGCTCGTCCTCCGGCCTTGCTTCTTTCAAGT
F P Q G L Q R A G G R N E E E S S
F L K A Y N E Q E A G T K K K V H
S S R P T T S R R P E R R R K F
CTTGAGTGCTCGTCCGCAGTGTCCTTTCCCGGATTACTGGCTTGGCAACG
GAACTCACGAGCAGGCGTCACAGGAAAGGGCCTAATGACCGAACCGTTGC
L E C S S A V S F P G L L A W Q R
L S A R P Q C P F P D Y W L G N
T . V L V R S V L S R I T G L A T
Bgl II
CACTCAGAACAGATCTCTTCGACTTCGTGTGGGTGCAGTTCTTCAACAAC
GTGAGTCTTGTCTAGAGAAGCTGAAGCACACCCACGTCAAGAAGTTGTTG
T Q N R S L R L R V G A V L Q Q
A L R T D L F D F V W V Q F F N N
H S E Q I S S T S C G C S S S T T

FIG. 17D-1

```
CCTTCGTGCCATTTCTCCCAGAACGCTATCAATCTTGCAAATGCGTTCAA
GGAAGCACGGTAAAGAGGGTCTTGCGATAGTTAGAACGTTTACGCAAGTT
P  F  V  P  F  L  P  E  R  Y  Q  S  C  K  C  V  Q
  P  S  C  H  F  S  Q  N  A  I  N  L  A  N  A  F  N
    L  R  A  I  S  P  R  T  L  S  I  L  Q  M  R  S

CAATTGGGTCATGTCCATCCCTGCGCAAAAGCTGTTCCTTGGGCTTCCTG
GTTAACCCAGTACAGGTAGGGACGCGTTTTCGACAAGGAACCCGAAGGAC
 Q  L  G  H  V  H  P  C  A  K  A  V  P  W  A  S  C
   N  W  V  M  S  I  P  A  Q  K  L  F  L  G  L  P
T  I  G  S  C  P  S  L  R  K  S  C  S  L  G  F  L

CTGCTCCTGAGGCTGCTCCAACTGGTGGCTACATTCCACCCCATGATCTC
GACGAGGACTCCGACGAGGTTGACCACCGATGTAAGGTGGGGTACTAGAG
  C  S  .  G  C  S  N  W  W  L  H  S  T  P  .  S
A  A  P  E  A  A  P  T  G  G  Y  I  P  P  H  D  L
  L  L  L  R  L  L  Q  L  V  A  T  F  H  P  M  I  S

ATATCTAAAGTTCTTCCGATCCTAAAGGATTCCGACAAGTACGCAGGAAT
TATAGATTTCAAGAAGGCTAGGATTTCCTAAGGCTGTTCATGCGTCCTTA
H  I  .  S  S  S  D  P  K  G  F  R  Q  V  R  R  N
  I  S  K  V  L  P  I  L  K  D  S  D  K  Y  A  G  I
    Y  L  K  F  F  R  S  .  R  I  P  T  S  T  Q  E

CATGCTGTGGACTAGATACCACGACAGAAACTCCGGCTACAGTTCTCAAG
GTACGACACCTGATCTATGGTGCTGTCTTTGAGGCCGATGTCAAGAGTTC
 H  A  V  D  .  I  P  R  Q  K  L  R  L  Q  F  S  S
   M  L  W  T  R  Y  H  D  R  N  S  G  Y  S  S  Q
S  C  C  G  L  D  T  T  T  E  T  P  A  T  V  L  K

TCAAGTCCCACGTGTGTCCAGCGCGTCGGTTCTCCAACATCTTATCTATG
AGTTCAGGGTGCACACAGGTCGCGCAGCCAAGAGGTTGTAGAATAGATAC
  Q  V  P  R  V  S  S  A  S  V  L  Q  H  L  I  Y
V  K  S  H  V  C  P  A  R  R  F  S  N  I  L  S  M
 S  S  P  T  C  V  Q  R  V  G  S  P  T  S  Y  L  C
```

FIG. 17D-2

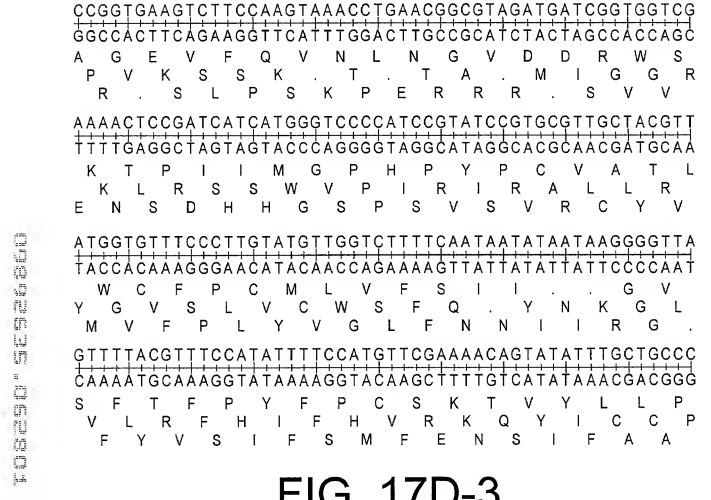

CCGGTGAAGTCTTCCAAGTAAACCTGAACGGCGTAGATGATCGGTGGTCG
GGCCACTTCAGAAGGTTCATTTGGACTTGCCGCATCTACTAGCCACCAGC
A G E V F Q V N L N G V D D R W S
P V K S S K . T . T A . M I G G R
R . S L P S K P E R R R . S V V
AAAACTCCGATCATCATGGGTCCCCATCCGTATCCGTGCGTTGCTACGTT
TTTTGAGGCTAGTAGTACCCAGGGGTAGGCATAGGCACGCAACGATGCAA
K T P I I M G P H P Y P C V A T L
K L R S S W V P I R I R A L L R
E N S D H H G S P S V S V R C Y V
ATGGTGTTTCCCTTGTATGTTGGTCTTTTCAATAATATAATAAGGGGTTA
TACCACAAAGGGAACATACAACCAGAAAAGTTATTATATTATTCCCCAAT
W C F P C M L V F S I I . . G V
Y G V S L V C W S F Q . Y N K G L
M V F P L Y V G L F N N I I R G .
GTTTTACGTTTCCATATTTTCCATGTTCGAAAACAGTATATTTGCTGCCC
CAAAATGCAAAGGTATAAAAGGTACAAGCTTTTGTCATATAAACGACGGG
S F T F P Y F P C S K T V Y L L P
V L R F H I F H V R K Q Y I C C P
F Y V S I F S M F E N S I F A A

FIG. 17D-3

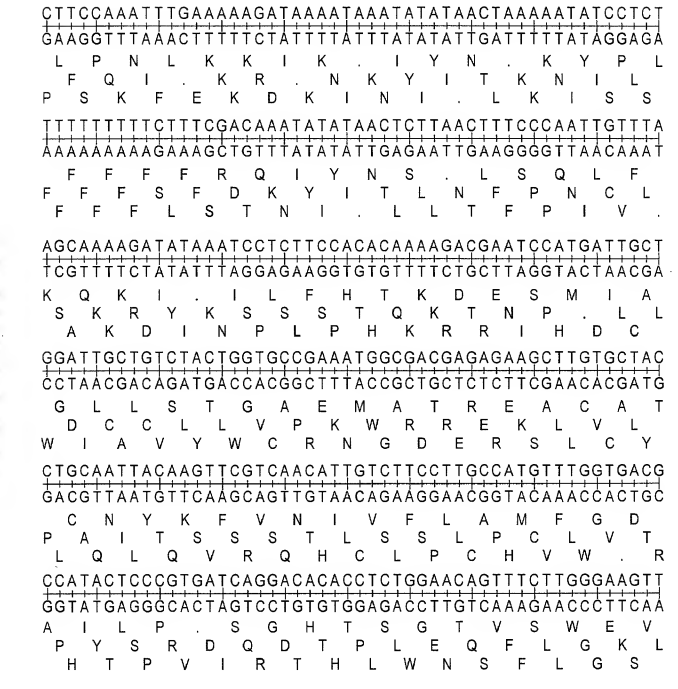

CTTCCAAATTTGAAAAAGATAAAATAAATATATAACTAAAAATATCCTCT
GAAGGTTTAAACTTTTTCTATTTTATTTATATATTGATTTTTATAGGAGA
L P N L K K I K . I Y N . K Y P L
F Q I . K R . N K Y I T K N I L
P S K F E K D K I N I . L K I S S
TTTTTTTTTCTTTCGACAAATATATAACTCTTAACTTTCCCAATTGTTTA
AAAAAAAAAGAAAGCTGTTTATATATTGAGAATTGAAGGGGTTAACAAAT
F F F F R Q I Y N S . L S Q L F
F F F S F D K Y I T L N F P N C L
F F F L S T N I . L L T F P I V .
AGCAAAAGATATAAATCCTCTTCCACACAAAAGACGAATCCATGATTGCT
TCGTTTTCTATATTTAGGAGAAGGTGTGTTTTCTGCTTAGGTACTAACGA
K Q K I . I L F H T K D E S M I A
S K R Y K S S S T Q K T N P . L L
A K D I N P L P H K R R I H D C
GGATTGCTGTCTACTGGTGCCGAAATGGCGACGAGAGAAGCTTGTGCTAC
CCTAACGACAGATGACCACGGCTTTACCGCTGCTCTCTTCGAACACGATG
G L L S T G A E M A T R E A C A T
D C C L L V P K W R R E K L V L
W I A V Y W C R N G D E R S L C Y
CTGCAATTACAAGTTCGTCAACATTGTCTTCCTTGCCATGTTTGGTGACG
GACGTTAATGTTCAAGCAGTTGTAACAGAAGGAACGGTACAAACCACTGC
C N Y K F V N I V F L A M F G D
P A I T S S S T L S S L P C L V T
L Q L Q V R Q H C L P C H V W . R
CCATACTCCCGTGATCAGGACACACCTCTGGAACAGTTTCTTGGGAAGTT
GGTATGAGGGCACTAGTCCTGTGTGGAGACCTTGTCAAAGAACCCTTCAA
A I L P . S G H T S G T V S W E V
P Y S R D Q D T P L E Q F L G K L
H T P V I R T H L W N S F L G S

FIG. 17E-1

```
AATCTTCTTCTCGGCTCCTCGGCGACCAATCTTGTGAGGTTCTTCTCCTG
TTAGAAGAAGAGCCGAGGAGCCGCTGGTTAGAACACTCCAAGAAGAGGAC
 N  L  L  L  G  S  S  A  T  N  L  V  R  F  F  S  .
  I  F  F  S  A  P  R  R  P  I  L  .  G  S  S  P
.  S  S  S  R  L  L  G  D  Q  S  C  E  V  L  L  L

AATGGTGTCCACTTCGACATCGAAGGTCTACCTGAGCGCANATCCACAGT
TTACCACAGATGAAGCTGTAGCTTCCAGATGGACTCGCGTNTAGGTGTCA
  M  V  S  T  S  T  S  K  V  Y  L  S  A  ?  P  Q
E  W  C  P  L  R  H  R  R  S  T  .  A  ?  I  H  S
 N  G  V  H  F  D  I  E  G  L  P  E  R  ?  S  T  V

TCCGACTACGTGTGGGTGCAGTTCTACTACACAGGCAACTCGCAGATGCC
AGGCTGATGCACACCCACGTCAAGATGATGTGTCCGTTGAGCGTCTACGG
F  R  L  R  V  G  A  V  L  L  H  R  Q  L  A  D  A
 S  D  Y  V  W  V  Q  F  Y  Y  T  G  N  S  Q  M  P
  P  T  T  C  G  C  S  S  T  T  Q  A  T  R  R  C

CGGTAACAATGGGTTCTCCATCCTGCATGGAAGGTGTTCCCTGGACTTCC
GCCATTGTTACCCAAGAGGTAGGACGTACCTTCCACAAGGGACCTGAAGG
 R  .  Q  W  V  L  H  P  A  W  K  V  F  P  G  L  P
  G  N  N  G  F  S  I  L  H  G  R  C  S  L  D  F
P  V  T  M  G  S  P  S  C  M  E  G  V  P  W  T  S

                                Sac I       Spe I
TGCTGCTCCTCAGGCTGCTGGAAGGAGCTCCATTCCACTAGTGATCTTAC
ACGACGAGGAGTCCGACGACCTTCCTCGAGGTAAGGTGATCACTAGAATG
  A  A  P  Q  A  A  G  R  S  S  I  P  L  V  I  L
L  L  L  L  R  L  L  E  G  A  P  F  H  .  .  S  Y
 C  C  S  S  G  C  W  K  E  L  H  S  T  S  D  L  T

ACGTGTCTTATCATCAAGAATTATAGCAAGTACCGAGGGATTATTAAAAT
TGCACAGAATAGTAGTTCTTAATATCGTTCATGGCTCCCTAATAATTTTA
H  V  S  Y  H  Q  E  L  .  Q  V  P  R  D  Y  .  N
 T  C  L  I  I  K  N  Y  S  K  Y  R  G  I  I  K  I
  R  V  L  S  S  R  I  I  A  S  T  E  G  L  L  K
```

FIG. 17E-2

```
AAAAAAAAAGGGAAGAATGGGAATTAGAATTAAAACTGAAACCGGCCATG
TTTTTTTTTCCCTTCTTACCCTTAATCTTAATTTTGACTTTGGCCGGTAC
 K  K  K  G  K  N  G  N  .  N  .  N  .  N  R  P  .
  K  K  K  G  R  M  G  I  R  I  K  T  E  T  G  H
K  K  K  R  E  E  W  E  L  E  L  K  L  K  P  A  M

AAGAACGTTTTCGAGTGAAGACAACGACAGTATGAGACGGTAGTTTGCTA
TTCTTGCAAAAGCTCACTTCTGTTGCTGTCATACTCTGCCATCAAACGAT
  R  T  F  R  V  K  T  N  D  S  M  R  R  .  F  A
E  E  R  F  E  .  R  Q  T  T  V  .  D  G  S  L  L
 K  N  V  S  S  E  D  K  R  Q  Y  E  T  V  V  C  Y

TGGACATGGATCGTTCCCAAAGCAGTCCAAGTCTTTATGAACCGGTCTAT
ACCTGTACCTAGCAAGGGTTTCGTCAGGTTCAGAAATACTTGGCCAGATA
M  D  M  D  R  S  Q  S  S  P  S  L  Y  E  P  V  Y
 W  T  W  I  V  P  K  A  V  Q  V  F  M  N  R  S  I
  G  H  G  S  F  P  K  Q  S  K  S  L  .  T  G  L

CGGTTCAGCCTTCAAGAACCGCGAGGATAACCGGCCCAAGAGAAACAACA
GCCAAGTCGGAAGTTCTTGGCGCTCCTATTGGCCGGGTTCTCTTTGTTGT
 R  F  S  L  Q  E  P  R  G  .  P  A  Q  E  K  Q  Q
  G  S  A  F  K  N  R  E  D  N  R  P  K  R  N  N
S  V  Q  P  S  R  T  A  R  I  T  G  P  R  E  T  T
```

FIG. 17E-3

```
AATTGTGGTGAGCTTTTANTATAAACCGAACGGTGCCGTCCGTCAGATGT
TTAACACCACTCGAAAATNATATTTGGCTTGCCACGGCAGGCAGTCTACA
 I  V  V  S  F  ?  Y  K  P  N  G  A  V  R  Q  M
K  L  W  .  A  F  ?  I  N  R  T  V  P  S  V  R  C
 N  C  G  E  L  L  ?  .  T  E  R  C  R  P  S  D  V

                 Bgl II
TAAATGGACGGCGGATAGATCTCCAGAGTAAATCTGAGGAAAATCGTTCC
ATTTACCTGCCGCCTATCTAGAGGTCTCATTTAGACTCCTTTTAGCAAGG
L  N  G  R  R  I  D  L  Q  S  K  S  E  E  N  R  S
 .  M  D  G  G  .  I  S  R  V  N  L  R  K  I  V  P
  K  W  T  A  D  R  S  P  E  .  I  .  G  K  S  F

GGCCCCCCTACCACGACCCACGCGATCCGTCCTCTCCCCCACCCCCTACA
CCGGGGGGATGGTGCTGGGTGCGCTAGGCAGGAGAGGGGGTGGGGGATGT
 G  P  P  T  T  T  H  A  I  R  P  L  P  H  P  L  H
  A  P  L  P  R  P  T  R  S  V  L  S  P  T  P  Y
R  P  P  Y  H  D  P  R  D  P  S  S  P  P  P  P  T

                                            EcoR I
CCTTTTTCTTCTTCCGCTCCTGCGATCGGTTATTTGATTTTGTGTATGAT
GGAAAAAGAAGAAGGCGAGGACGCTAGCCAATAAACTAAAACACATACTA
 L  F  L  L  P  L  L  R  S  V  I  .  F  C  V  .
T  F  F  F  F  R  S  C  D  R  L  F  D  F  V  Y  D
 P  F  S  S  S  A  P  A  I  G  Y  L  I  L  C  M  I

ATCCAATTTCTTTTCTGGAGTGGTATCCTATTCTAATTTCTTAGATTGTT
TAGGTTAAAGAAAAGACCTCACCATAGGATAAGATTAAAGAATCTAACAA
Y  P  I  S  F  L  E  W  Y  P  I  L  I  S  .  I  V
 I  Q  F  L  F  W  S  G  I  L  F  .  F  L  R  L  L
  S  N  F  F  S  G  V  V  S  Y  S  N  F  L  D  C

GTATTGAACCATCAGTTTTGGTTTAAGCGCATGATGGCGGAGAGTTTCGG
CCTAACTTGGTAGTCAAAACCAAATTCGCGTACTACCGCCTCTCAAAGCC
 V  L  N  H  Q  F  W  F  K  R  M  M  A  E  S  F  G
  Y  .  T  I  S  F  G  L  S  A  .  W  R  R  V  S
C  I  E  P  S  V  L  V  .  A  H  D  G  G  E  F  R
```

FIG. 17F-1

```
AATCTTCTTCTCGGCTCCTCGGCGACCAATCTTGTGAGGTTCTTCTCCTG
TTAGAAGAAGAGCCGAGGAGCCGCTGGTTAGAACACTCCAAGAAGAGGAC
 N  L  L  L  G  S  S  A  T  N  L  V  R  F  F  S  .
  I  F  F  S  A  P  R  R  P  I  L  .  G  S  S  P
.  S  S  S  R  L  L  G  D  Q  S  C  E  V  L  L  L

AATGGTGTCCACTTCGACATCGAAGGTCTACCTGAGCGCANATCCACAGT
TTACCACAGATGAAGCTGTAGCTTCCAGATGGACTCGCGTNTAGGTGTCA
  M  V  S  T  S  T  S  K  V  Y  L  S  A  ?  P  Q
E  W  C  P  L  R  H  R  R  S  T  .  A  ?  I  H  S
 N  G  V  H  F  D  I  E  G  L  P  E  R  ?  S  T  V

TCCGACTACGTGTGGGTGCAGTTCTACTACACAGGCAACTCGCAGATGCC
AGGCTGATGCACACCCACGTCAAGATGATGTGTCCGTTGAGCGTCTACGG
F  R  L  R  V  G  A  V  L  L  H  R  Q  L  A  D  A
 S  D  Y  V  W  V  Q  F  Y  Y  T  G  N  S  Q  M  P
  P  T  T  C  G  C  S  S  T  T  Q  A  T  R  R  C

CGGTAACAATGGGTTCTCCATCCTGCATGGAAGGTGTTCCCTGGACTTCC
GCCATTGTTACCCAAGAGGTAGGACGTACCTTCCACAAGGGACCTGAAGG
 R  .  Q  W  V  L  H  P  A  W  K  V  F  P  G  L  P
  G  N  N  G  F  S  I  L  H  G  R  C  S  L  D  F
P  V  T  M  G  S  P  S  C  M  E  G  V  P  W  T  S

                                   Sac I      Spe I
TGCTGCTCCTCAGGCTGCTGGAAGGAGCTCCATTCCACTAGTGATCTTAC
ACGACGAGGAGTCCGACGACCTTCCTCGAGGTAAGGTGATCACTAGAATG
  A  A  P  Q  A  A  G  R  S  S  I  P  L  V  I  L
L  L  L  L  R  L  L  E  G  A  P  F  H  .  .  S  Y
 C  C  S  S  G  C  W  K  E  L  H  S  T  S  D  L  T

ACGTGTCTTATCATCAAGAATTATAGCAAGTACCGAGGGATTATTAAAAT
TGCACAGAATAGTAGTTCTTAATATCGTTCATGGCTCCCTAATAATTTTA
H  V  S  Y  H  Q  E  L  .  Q  V  P  R  D  Y  .  N
 T  C  L  I  I  K  N  Y  S  K  Y  R  G  I  I  K  I
  R  V  L  S  S  R  I  I  A  S  T  E  G  L  L  K
```

FIG. 17E-2

```
CTCTCCCGACCATTAGGATGAGGGTTGAAGGTGAAAATACTTTCTGGTAA
GAGAGGGCTGGTAATCCTACTCCCAACTTCCACTTTTATGAAAGACCATT
  S  P  D  H  .  D  E  G  .  R  .  K  Y  F  L  V
A  L  P  T  I  R  M  R  V  E  G  E  N  T  F  W  .
 L  S  R  P  L  G  .  G  L  K  V  K  I  L  S  G  N

TTTTCCTCTCTAAATTCTTCCAAACACGACACAAGTATAATTATAGACCA
AAAAGGAGAGATTTAAGAAGGTTTGTGCTGTGTTCATATTAATATCTGGT
I  F  L  S  K  F  F  Q  T  R  H  K  Y  N  Y  R  P
 F  S  S  L  N  S  S  K  H  D  T  S  I  I  I  D  Q
  F  P  L  .  I  L  P  N  T  T  Q  V  .  L  .  T

AGATTGATTCTTCTTATGCACCGATTCTCACTTCCCTTCCCTCTGTGTTA
TCTAACTAAGAAGAATACGTGGCTAAGAGTGAAGGGAAGGGAGACACAAT
 R  L  I  L  L  M  H  R  F  S  L  P  F  P  L  C  Y
  D  .  F  F  L  C  T  D  S  H  F  P  S  L  C  V
K  I  D  S  S  Y  A  P  I  L  T  S  L  P  S  V  L

TGGTTATCGTTGTTACTGATGGTTGCTTAACTCATGGGGTAGCGCCTGGG
ACCAATAGCAACAATGACTACCAACGAATTGAGTACCCCATCGCGGACCC
  G  Y  R  C  Y  .  W  L  L  N  S  W  G  S  A  W
M  V  I  V  V  T  D  G  C  L  T  H  G  V  A  P  G
 W  L  S  L  L  L  M  V  A  .  L  M  G  .  R  L  G
```

FIG. 17F-3

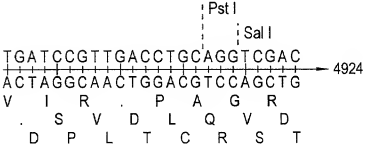


FIG. 17G-1

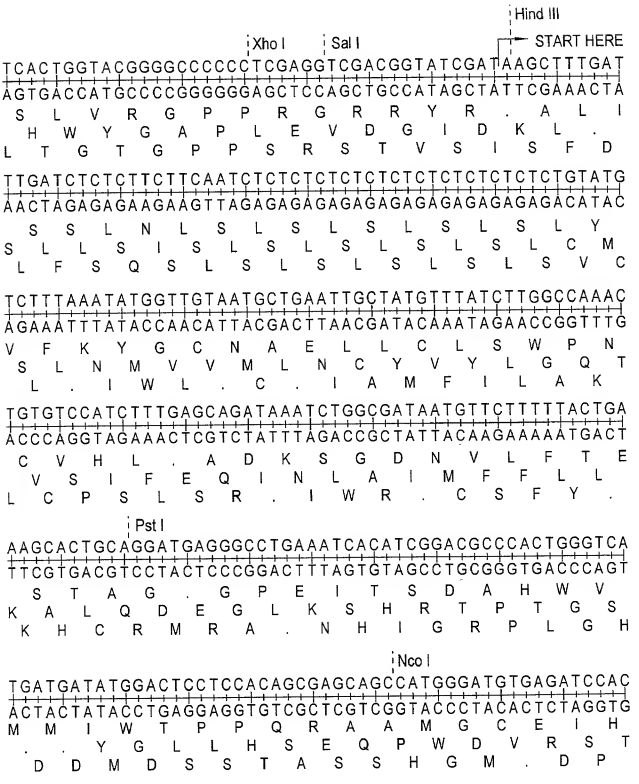

Hind III
Xho I
Sal I
START HERE
TCACTGGTACGGGGCCCCCCTCGAGGTCGACGGTATCGATAAGCTTTGAT
AGTGACCATGCCCCGGGGGGAGCTCCAGCTGCCATAGCTATTCGAAACTA
S L V R G P P R G R R Y R . A L I
H W Y G A P L E V D G I D K L .
L T G T G P P S R S T V S I S F D
TTGATCTCTCTTCTTCAATCTCTCTCTCTCTCTCTCTCTCTCTCTGTATG
AACTAGAGAGAAGAAGTTAGAGAGAGAGAGAGAGAGAGAGAGAGACATAC
S S L N L S L S L S L S L S L Y
S L L S I S L S L S L S L S L C M
L F S Q S L S L S L S L S L S V C
TCTTTAAATATGGTTGTAATGCTGAATTGCTATGTTTATCTTGGCCAAAC
AGAAATTTATACCAACATTACGACTTAACGATACAAATAGAACCGGTTTG
V F K Y G C N A E L L C L S W P N
S L N M V V M L N C Y V Y L G Q T
L . I W L . C . I A M F I L A K
TGTGTCCATCTTTGAGCAGATAAATCTGGCGATAATGTTCTTTTTACTGA
ACCCAGGTAGAAACTCGTCTATTTAGACCGCTATTACAAGAAAAATGACT
C V H L . A D K S G D N V L F T E
V S I F E Q I N L A I M F F L L
L C P S L S R . I W R . C S F Y .
Pst I
AAGCACTGCAGGATGAGGGCCTGAAATCACATCGGACGCCCACTGGGTCA
TTCGTGACGTCCTACTCCCGGACTTTAGTGTAGCCTGCGGGTGACCCAGT
S T A G . G P E I T S D A H W V
K A L Q D E G L K S H R T P T G S
K H C R M R A . N H I G R P L G H
Nco I
TGATGATATGGACTCCTCCACAGCGAGCAGCCATGGGATGTGAGATCCAC
ACTACTATACCTGAGGAGGTGTCGCTCGTCGGTACCCTACACTCTAGGTG
M M I W T P P Q R A A M G C E I H
. . Y G L L H S E Q P W D V R S T
D D M D S S T A S S H G M . D P

FIG. 18A-1

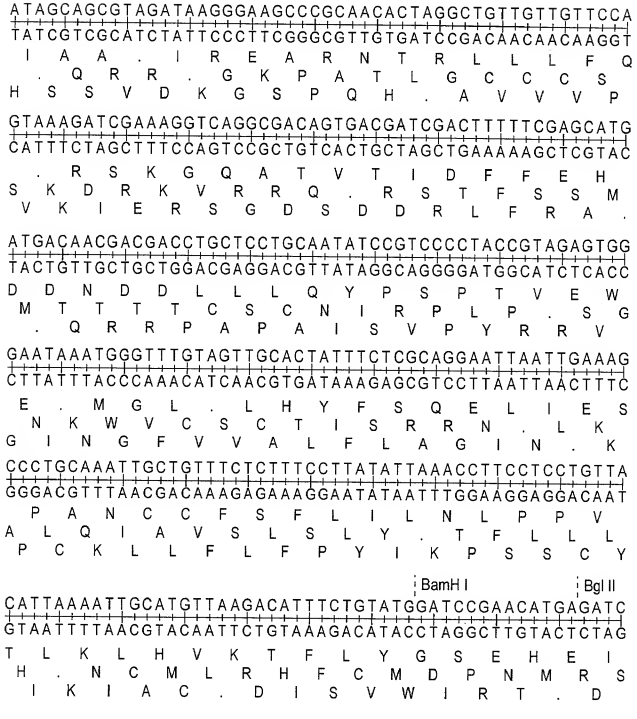


FIG. 18A-2


TATCATTGAAGTAATGGGTAGGATTTACATTATCATCATCATCATCATCT
ATAGTAACTTCATTACCCATCCTAAATGTAATAGTAGTAGTAGTAGTAGA
Y H . S N G . D L H Y H H H H H L
I I E V M G R I Y I I I I I I I
L S L K . W V G F T L S S S S S S
Nco I
CCATGGGTTTGGATCTAATTAGACCGAAAACCTCATTTAAAATCCAACCC
GGTACCCAAACCTAGATTAATCTGGCTTTTGGAGTAAATTTTAGGTTGGG
H G F G S N . T E N L I . N P T
S M G L D L I R P K T S F K I Q P
P W V W I . L D R K P H L K S N P
CAATATTGGCTTGACTTGCTCCATCTCCAAGAAAAATACAACAAGAACAA
GTTATAACCGAACTGAACGAGGTAGAGGTTCTTTTTATGTTGTTCTTGTT
P I L A . L A P S P R K I Q Q E Q
Q Y W L D L L H L Q E K Y N K N N
N I G L T C S I S K K N T T R T
CAAAAATTTAGGATGCACATTGAATTGATTTGGTCACTATGAGAGAATCA
GTTTTTAAATCCTACGTGTAACTTAACTAAACCAGTGATACTCTCTTAGT
Q K F R M H I E L I W S L . E N H
K N L G C T L N . F G H Y E R I
T K I . D A H . I D L V T M R E S

FIG. 18A-3

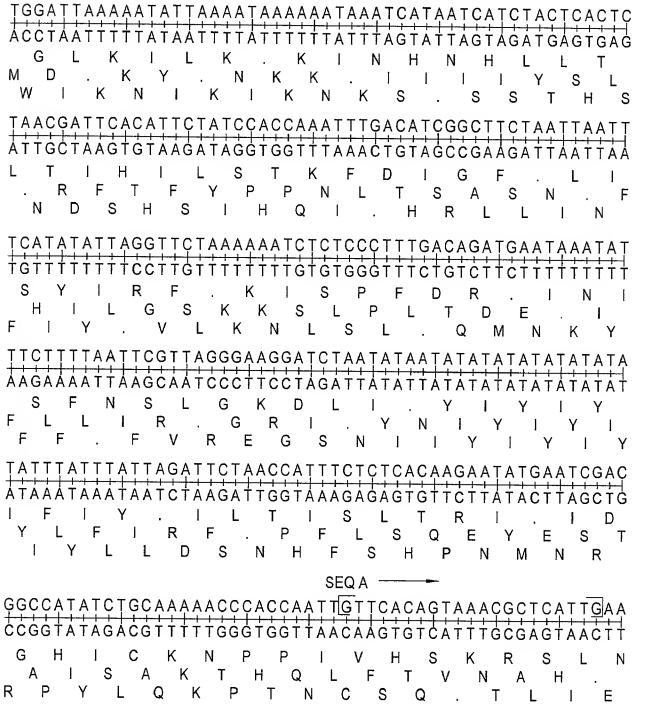


FIG. 18B-1

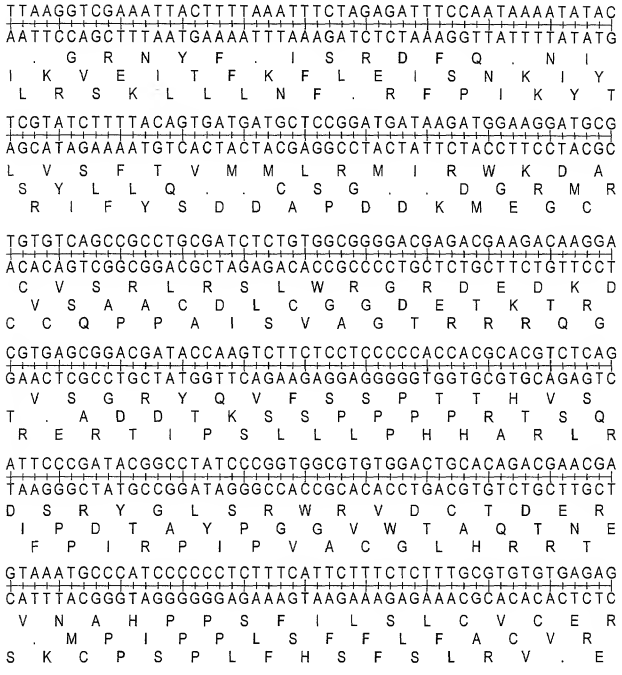

TTAAGGTCGAAATTACTTTTAAATTTCTAGAGATTTCCAATAAAATATAC
AATTCCAGCTTTAATGAAAATTTAAAGATCTCTAAAGGTTATTTTATATG
. G R N Y F . I S R D F Q . N I
I K V E I T F K F L E I S N K I Y
L R S K L L L N F . R F P I K Y T
TCGTATCTTTTACAGTGATGATGCTCCGGATGATAAGATGGAAGGATGCG
AGCATAGAAAATGTCACTACTACGAGGCCTACTATTCTACCTTCCTACGC
L V S F T V M M L R M I R W K D A
S Y L L Q . . C S G . . D G R M R
R I F Y S D D A P D D K M E G C
TGTGTCAGCCGCCTGCGATCTCTGTGGCGGGGACGAGACGAAGACAAGGA
ACACAGTCGGCGGACGCTAGAGACACCGCCCCTGCTCTGCTTCTGTTCCT
C V S R L R S L W R G R D E D K D
V S A A C D L C G G D E T K T R
C C Q P P A I S V A G T R R R Q G
CGTGAGCGGACGATACCAAGTCTTCTCCTCCCCCACCACGCACGTCTCAG
GAACTCGCCTGCTATGGTTCAGAAGAGGAGGGGGTGGTGCGTGCAGAGTC
V S G R Y Q V F S S P T T H V S
T . A D D T K S S P P P P R T S Q
R E R T I P S L L L P H H A R L R
ATTCCCGATACGGCCTATCCCGGTGGCGTGTGGACTGCACAGACGAACGA
TAAGGGCTATGCCGGATAGGGCCACCGCACACCTGACGTGTCTGCTTGCT
D S R Y G L S R W R V D C T D E R
I P D T A Y P G G V W T A Q T N E
F P I R P I P V A C G L H R R T
GTAAATGCCCATCCCCCCTCTTTCATTCTTTCTCTTTGCGTGTGTGAGAG
CATTTACGGGTAGGGGGGAGAAAGTAAGAAAGAGAAACGCACACACTCTC
V N A H P P S F I L S L C V C E R
. M P I P P L S F F L F A C V R
S K C P S P L F H S F S L R V . E

FIG. 18B-2

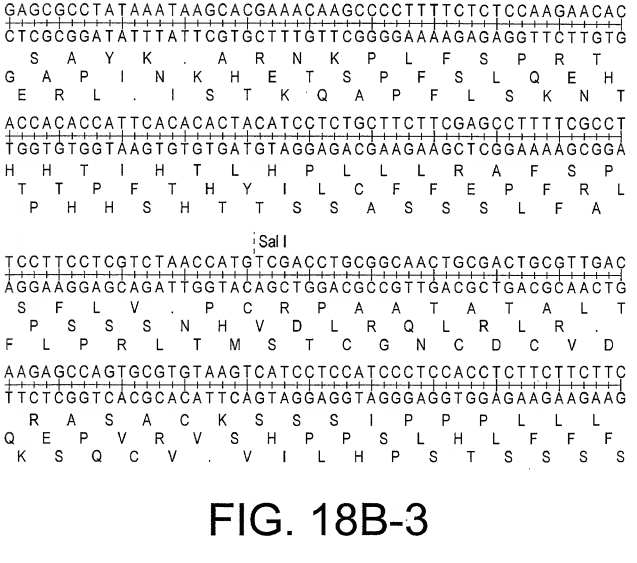

GAGCGCCTATAAATAAGCACGAAACAAGCCCCTTTTCTCTCCAAGAACAC
CTCGCGGATATTTATTCGTGCTTTGTTCGGGGAAAAGAGAGGTTCTTGTG
S A Y K . A R N K P L F S P R T
G A P I N K H E T S P F S L Q E H
E R L . I S T K Q A P F L S K N T
ACCACACCATTCACACACTACATCCTCTGCTTCTTCGAGCCTTTTCGCCT
TGGTGTGGTAAGTGTGTGATGTAGGAGACGAAGAAGCTCGGAAAAGCGGA
H H T I H T L H P L L L R A F S P
T T P F T H Y I L C F F E P F R L
P H H S H T T S S A S S S L F A
SalI
TCCTTCCTCGTCTAACCATGTCGACCTGCGGCAACTGCGACTGCGTTGAC
AGGAAGGAGCAGATTGGTACAGCTGGACGCCGTTGACGCTGACGCAACTG
S F L V . P C R P A A T A T A L T
P S S S N H V D L R Q L R L R .
F L P R L T M S T C G N C D C V D
AAGAGCCAGTGCGTGTAAGTCATCCTCCATCCCTCCACCTCTTCTTCTTC
TTCTCGGTCACGCACATTCAGTAGGAGGTAGGGAGGTGGAGAAGAAGAAG
R A S A C K S S S I P P P L L L
Q E P V R V S H P P S L H L F F F
K S Q C V . V I L H P S T S S S S

FIG. 18B-3

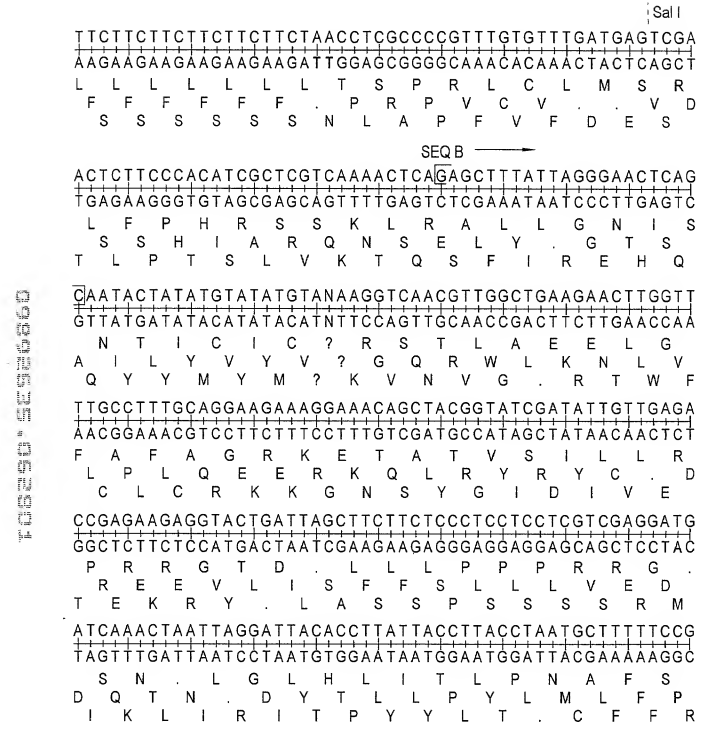


FIG. 18C-1

```
                         Sal I
TATTCGTTTCGTCTCTTCAGCTACGTCGACGAGGTGATCGTTGCCGCAGA
ATAAGCAAAGCAGAGAAGTCGATGCAGCTGCTCCACTAGCAACGGCGTCT
V  F  V  S  S  L  Q  L  R  R  R  G  D  R  C  R  R
 Y  S  F  R  L  F  S  Y  V  D  E  V  I  V  A  A  E
  I  R  F  V  S  S  A  T  S  T  R  .  S  L  P  Q

AGCTGCCGAGCATGACGGCAAGTGCAAGTGCGGCGCCGCCTGCGCCTGCA
TCGACGGCTCGTACTGCCGTTCACGTTCACGCCGCGGCGGACGCGGACGT
 S  C  R  A  .  R  Q  V  Q  V  R  R  R  L  R  L  H
  A  A  E  H  D  G  K  C  K  C  G  A  A  C  A  C
K  L  P  S  M  T  A  S  A  S  A  A  P  P  A  P  A

CCGACTGCAAGTGTGGCAACTGAGAAGCACTTGTGTCACTACCACTAAAA
GGCTGACGTTCACACCGTTGACTCTTCGTGAACACAGTGATGGTGATTTT
  R  L  Q  V  W  Q  L  R  S  T  C  V  T  T  T  K
T  D  C  K  C  G  N  .  E  A  L  V  S  L  P  L  N
 P  T  A  S  V  A  T  E  K  H  L  C  H  Y  H  .  I

AAAAGTTTGCAATGCATAAAAAACAAAAGAACAAAAAAAAAAAAGGAAGA
TTTTCAAACGTTACGTATTTTTTGTTTTCTTGTTTTTTTTTTTTCCTTCT
.  K  F  A  M  H  K  K  Q  K  N  K  K  K  K  G  R
 K  S  L  Q  C  I  K  N  K  R  T  K  K  K  K  E  E
  K  V  C  N  A  .  K  T  K  E  Q  K  K  K  R  K

AGAAGAAGGTGTGGCTATGTACTCTAATAATTCGGGCAGGCTGATAAGTT
TCTTCTTCCACACCGATACATGAGATTATTAAGCCCGTCCGACTATTCAA
 R  R  R  C  G  Y  V  L  .  .  F  G  Q  A  D  R  L
  E  E  G  V  A  M  Y  S  N  N  S  G  R  L  I  G
K  K  K  V  W  L  C  T  L  I  I  R  A  G  .  .  V

GTAAGATGGGATAACGCAGTATCATCTGTGTTATCTCTGTCCTGTGTTAC
CATTCTACCCTATTGCGTCATAGTAGACACAATAGAGACAGGACACAATG
  .  D  G  I  T  Q  Y  H  L  C  Y  L  C  P  V  L
C  K  M  G  .  R  S  I  I  C  V  I  S  V  L  C  Y
 V  R  W  D  N  A  V  S  S  V  L  S  L  C  V  T
```

FIG. 18C-2


AACTCTCCTATCTATCCTAGTCAATGAAATATTATTAGTATTAATCTGGT
TTGAGAGGATAGATAGGATCAGTTACTTTATAATAATCATAATTAGACCA
Q L S Y L S . S M K Y Y . Y . S G
N S P I Y P S Q . N I I S I N L V
T L L S I L V N E I L L V L L W
TGTGTCATTCATATATGCTGCTGCTGCTGCTTCCTCTTTCACCAATC
ACACAGTAAGTATATACGACGACGACGACGACGAAGGAGAAAGTGGTTAG
C V I H I C C C C C C F L F H Q S
V S F I Y A A A A A A S S F T N
L C H S Y M L L L L L L P L S P I
AACCCAAAGGATCGATTGCACTGTAAGGCCCAACTTCCTCACCGATATGC
TTGGGTTTCCTAGCTAACGTGACATTCCGGGTTGAAGGAGTGGCTATACG
T Q R I D C T V R P N F L T D M
Q P K G S I A L . G P T S S P I C
N P K D R L H C K A Q L P H R Y A
SEQ D
TCGCTCAGTTACGATGAATGAACAGCAACCAAACGAGTCTGC
2392
AGCGAGTCAATGCTACTTACTTGTCGTTGGTTTGCTCAGACG
L A Q L R . M N S N Q T S L
S L S Y D E . T A T K R V C
R S V T M N E Q Q P N E S A

FIG. 18C-3

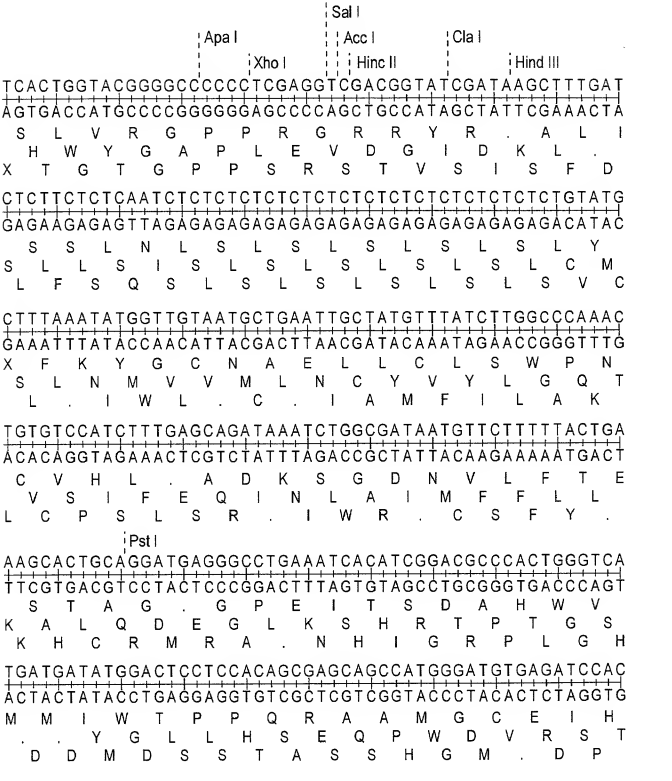

Sal I
Apa I
Acc I
Cla I
Xho I
Hinc II
Hind III
TCACTGGTACGGGGCCCCCCCTCGAGGTCGACGGTATCGATAAGCTTTGAT
AGTGACCATGCCCCGGGGGGAGCCCCAGCTGCCATAGCTATTCGAAACTA
S L V R G P P R G R R Y R . A L I
H W Y G A P L E V D G I D K L .
X T G T G P P S R S T V S I S F D
CTCTTCTCTCAATCTCTCTCTCTCTCTCTCTCTCTCTCTCTCTCTGTATG
GAGAAGAGAGTTAGAGAGAGAGAGAGAGAGAGAGAGAGAGAGACATAC
S S L N L S L S L S L S L S L S L Y
S L L S I S L S L S L S L S L C M
L F S Q S L S L S L S L S L S V C
CTTTAAATATGGTTGTAATGCTGAATTGCTATGTTTATCTTGGCCCAAAC
GAAATTTATACCAACATTACGACTTAACGATACAAATAGAACCGGGTTTG
X F K Y G C N A E L L C L S W P N
S L N M V V M L N C Y V Y L G Q T
L . I W L . C . I A M F I L A K
TGTGTCCATCTTTGAGCAGATAAATCTGGCGATAATGTTCTTTTTACTGA
ACACAGGTAGAAACTCGTCTATTTAGACCGCTATTACAAGAAAAATGACT
C V H L . A D K S G D N V L F T E
V S I F E Q I N L A I M F F L L
L C P S L S R . I W R . C S F Y .
Pst I
AAGCACTGCAGGATGAGGGCCTGAAATCACATCGGACGCCCACTGGGTCA
TTCGTGACGTCCTACTCCCGGACTTTAGTGTAGCCTGCGGGTGACCCAGT
S T A G . G P E I T S D A H W V
K A L Q D E G L K S H R T P T G S
K H C R M R A . N H I G R P L G H
TGATGATATGGACTCCTCCACAGCGAGCAGCCATGGGATGTGAGATCCAC
ACTACTATACCTGAGGAGGTGTCGCTCGTCGGTACCCTACACTCTAGGTG
M M I W T P P Q R A A M G C E I H
. . Y G L L H S E Q P W D V R S T
D D M D S S T A S S H G M . D P

FIG. 19A-1

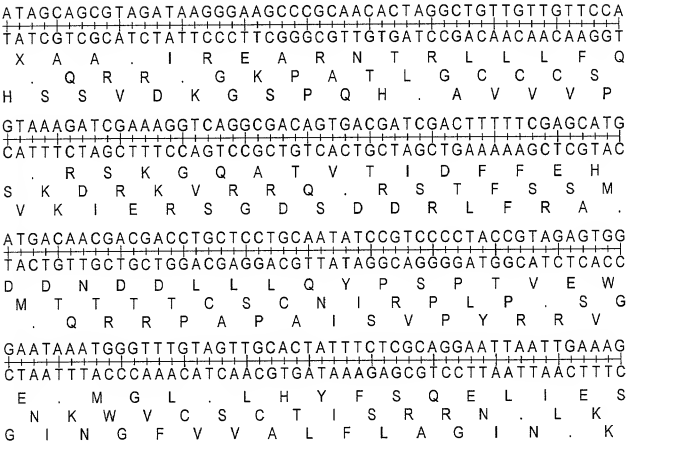


FIG. 19A-2

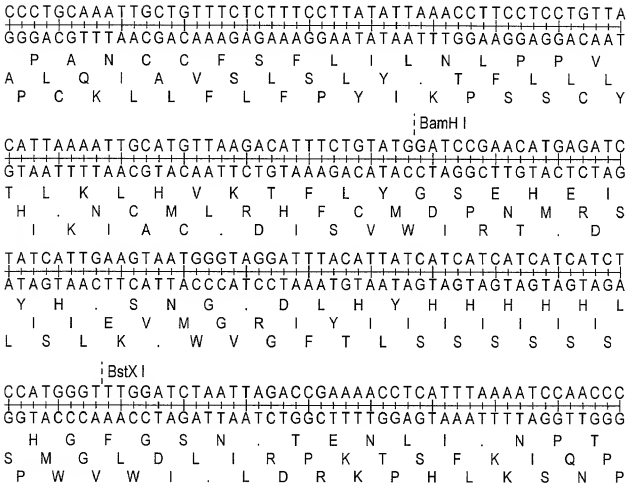

CCCTGCAAATTGCTGTTTCTCTTTCCTTATATTAAACCTTCCTCCTGTTA
GGGACGTTTAACGACAAAGAGAAAGGAATATAATTTGGAAGGAGGACAAT
P A N C C F S F L I L N L P P V
A L Q I A V S L S L Y . T F L L L
P C K L L F L F P Y I K P S S C Y
BamH I
CATTAAAATTGCATGTTAAGACATTTCTGTATGGATCCGAACATGAGATC
GTAATTTTAACGTACAATTCTGTAAAGACATACCTAGGCTTGTACTCTAG
T L K L H V K T F L Y G S E H E I
H . N C M L R H F C M D P N M R S
I K I A C . D I S V W I R T . D
TATCATTGAAGTAATGGGTAGGATTTACATTATCATCATCATCATCATCT
ATAGTAACTTCATTACCCATCCTAAATGTAATAGTAGTAGTAGTAGTAGA
Y H . S N G . D L H Y H H H H H L
I I E V M G R I Y I I I I I I I
L S L K . W V G F T L S S S S S S
BstX I
CCATGGGTTTGGATCTAATTAGACCGAAAACCTCATTTAAAATCCAACCC
GGTACCCAAACCTAGATTAATCTGGCTTTTGGAGTAAATTTTAGGTTGGG
H G F G S N . T E N L I . N P T
S M G L D L I R P K T S F K I Q P
P W V W I . L D R K P H L K S N P

FIG. 19A-3

```
XXATATTGGCTTGACTTGCTCCATCTCCAAGAAAAATACAACAAGAACAA
XXTATAACCGAACTGAACGAGGTAGAGGTTCTTTTTATGTTGTTCTTGTT
X  I  L  A  .  L  A  P  S  P  R  K  I  Q  Q  E  Q
 X  Y  W  L  D  L  L  H  L  Q  E  K  Y  N  K  N  N
  N  I  G  L  T  C  S  I  S  K  K  N  T  T  R  T

CAAAAATTTAGGATGCACATTGAATTGATTTGGTCACTATGAGAGAATCA
GTTTTTAAATCCTACGTGTAACTTAACTAAACCAGTGATACTCTCTTAGT
 Q  K  F  R  M  H  I  E  L  I  W  S  L  .  E  N  H
  K  N  L  G  C  T  L  N  .  F  G  H  Y  E  R  I
T  K  I  .  D  A  H  .  I  D  L  V  T  M  R  E  S

TGGATTAAAAATATTAAAATAAAAAATAAATCATAATCATCTACTCACTC
ACCTAATTTTTATAATTTTATTTTTTATTTAGTATTAGTAGATGAGTGAG
 G  L  K  I  L  K  .  K  I  N  H  N  H  L  L  T
.  D  .  K  Y  .  N  K  K  .  I  I  I  I  Y  S  L
 W  I  K  N  I  K  I  K  N  K  S  .  S  S  T  H  S

TAACGATTCACATTCTATCCACCAAATTTGACATCGGCTTCTAATTAATT
ATTGCTAAGTGTAAGATAGGTGGTTTAAACTGTAGCCGAAGATTAATTAA
L  T  I  H  I  L  S  T  K  F  D  I  G  F  .  L  I
 .  R  F  T  F  Y  P  P  N  L  T  S  A  S  N  .  F
  N  D  S  H  S  I  H  Q  I  .  H  R  L  L  I  N

TCATATATTAGGTTCTAAAAAATCTCTCCCTTTGACAGATGAATAAATAT
AGTATATAATCCAAGATTTTTTAGAGAGGGAAACTGTCTACTTATTTATA
 S  Y  I  R  F  .  K  I  S  P  F  D  R  .  I  N  I
  H  I  L  G  S  K  K  S  L  P  L  T  D  E  .  I
F  I  Y  .  V  L  K  N  L  S  L  .  Q  M  N  K  Y

TTCTTTTAATTCGTTAGGGAAGGATCTAATATAATATATATATATATATA
AAGAAAATTAAGCAATCCCTTCCTAGATTATATTATATATATATATATAT
  S  F  N  S  L  G  K  D  L  I  .  Y  I  Y  I  Y
F  L  L  I  R  .  G  R  I  .  Y  N  I  Y  I  Y  I
 F  F  .  F  V  R  E  G  S  N  I  I  Y  I  Y  I  Y
```

FIG. 19B-1

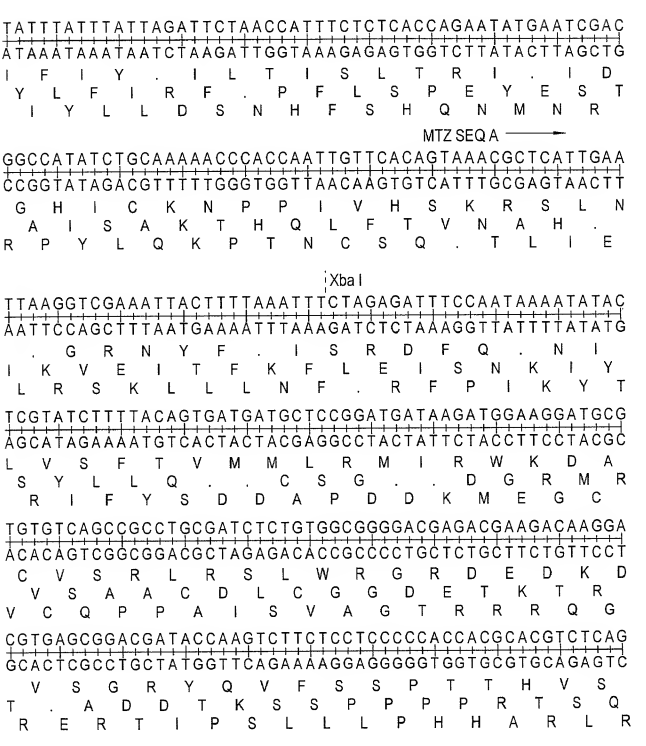


FIG. 19B-2

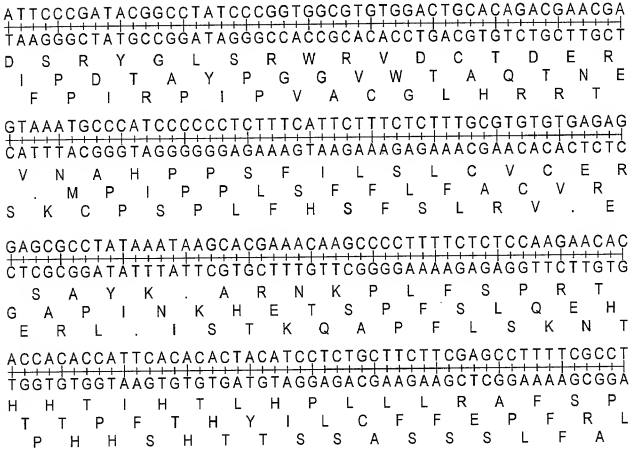

ATTCCCGATACGGCCTATCCCGGTGGCGTGTGGACTGCACAGACGAACGA
TAAGGGCTATGCCGGATAGGGCCACCGCACACCTGACGTGTCTGCTTGCT
D S R Y G L S R W R V D C T D E R
I P D T A Y P G G V W T A Q T N E
F P I R P I P V A C G L H R R T
GTAAATGCCCATCCCCCCTCTTTCATTCTTTCTCTTTGCGTGTGTGAGAG
CATTTACGGGTAGGGGGGAGAAAGTAAGAAAGAGAAACGAACACACTCTC
V N A H P P S F I L S L C V C E R
. M P I P P L S F F L F A C V R
S K C P S P L F H S F S L R V . E
GAGCGCCTATAAATAAGCACGAAACAAGCCCCTTTTCTCTCCAAGAACAC
CTCGCGGATATTTATTCGTGCTTTGTTCGGGGAAAAGAGAGGTTCTTGTG
S A Y K . A R N K P L F S P R T
G A P I N K H E T S P F S L Q E H
E R L . I S T K Q A P F L S K N T
ACCACACCATTCACACACTACATCCTCTGCTTCTTCGAGCCTTTTCGCCT
TGGTGTGGTAAGTGTGTGATGTAGGAGACGAAGAAGCTCGGAAAAGCGGA
H H T I H T L H P L L L R A F S P
T T P F T H Y I L C F F E P F R L
P H H S H T T S S A S S S L F A

FIG. 19B-3

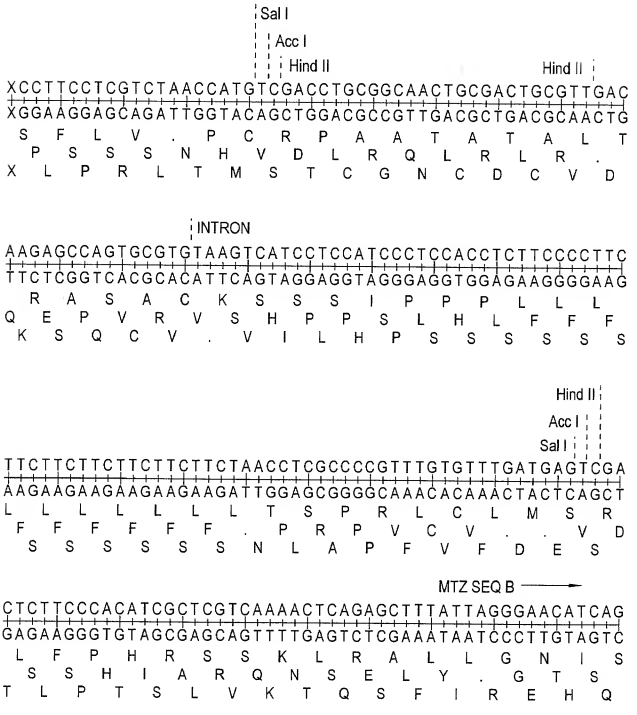

Sal I
Acc I
Hind II
Hind II
XCCTTCCTCGTCTAACCATGTCGACCTGCGGCAACTGCGACTGCGTTGAC
XGGAAGGAGCAGATTGGTACAGCTGGACGCCGTTGACGCTGACGCAACTG
S F L V . P C R P A A T A T A L T
P S S S N H V D L R Q L R L R .
X L P R L T M S T C G N C D C V D
INTRON
AAGAGCCAGTGCGTGTAAGTCATCCTCCATCCCTCCACCTCTTCCCCTTC
TTCTCGGTCACGCACATTCAGTAGGAGGTAGGGAGGTGGAGAAGGGGAAG
R A S A C K S S S I P P P L L L
Q E P V R V S H P P S L H L F F F
K S Q C V . V I L H P S S S S S S
Hind II
Acc I
Sal I
TTCTTCTTCTTCTTCTTCTAACCTCGCCCCGTTTGTGTTTGATGAGTCGA
AAGAAGAAGAAGAAGAAGATTGGAGCGGGGCAAACACAAACTACTCAGCT
L L L L L L L T S P R L C L M S R
F F F F F . P R P V C V . . V D
S S S S S S N L A P F V F D E S
MTZ SEQ B
CTCTTCCCACATCGCTCGTCAAAACTCAGAGCTTTATTAGGGAACATCAG
GAGAAGGGTGTAGCGAGCAGTTTTGAGTCTCGAAATAATCCCTTGTAGTC
L F P H R S S K L R A L L G N I S
S S H I A R Q N S E L Y . G T S
T L P T S L V K T Q S F I R E H Q

FIG. 19C-1


Hinc II
CAATACTATATGTATATGTANAAGGTCAACGTTGGCTGAAGAACTTGGTT
GTTATGATATACATATACATNTTCCAGTTGCAACCGACTTCTTGAACCAA
N T I C I C ? R S T L A E E L G
A I L Y V Y V ? G Q R W L K N L V
G Y Y M Y M ? K V N V G . R T W F
INTION
MT2 Bam/ MT2 SEQ B
TTGCCTTTGCAGGAAGAANGGAAACAGCTACNGTATCNATATTGGTTGNA
AACGGAAACGTCCTTCTTNCCTTTGTCGATGNCATAGNTATAACCAACNT
F A F A G R ? E T A T V S I L L ?
L P L Q E E ? K Q L ? Y ? Y C . ?
C L C R K ? G N S Y ? I ? I V ?
CCGAAAANAGGTACTGATTANCTTCTTCTCCCTCCTCCTCGTCGANGATG
GGCTTTTNTCCATGACTAATNGAAGAAGAGGGAGGAGGAGCAGCTNCTAC
P K ? G T D ? L L L P P P R R ? .
R K ? V L I ? F F S L L L V ? D
T E ? R Y . L ? S S P S S S S ? M
ATCAAACTAATTAGGATTACNCCTTATTAC
1880
TAGTTTGATTAATCCTAATGNGGAATAATG
S N . L G L ? L I T
D Q T N . D Y ? L L
I K L I R I T P Y Y

FIG. 19C-2

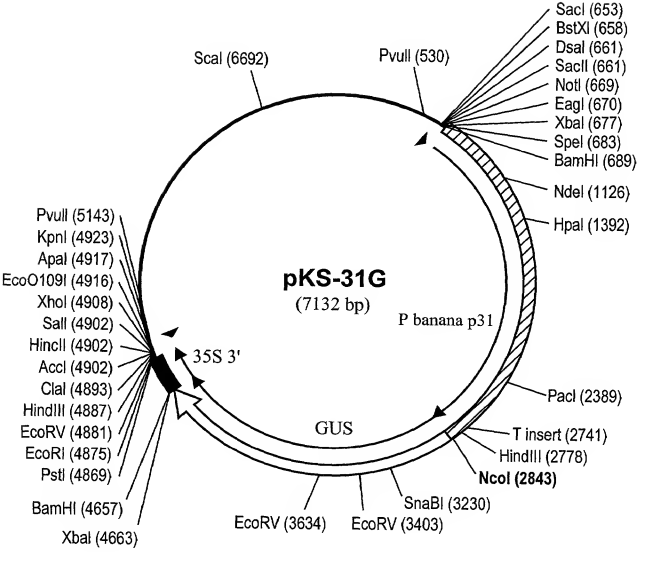

SacI (653)
BstXI (658)
DsaI (661)
SacII (661)
NotI (669)
EagI (670)
XbaI (677)
SpeI (683)
BamHI (689)
NdeI (1126)
HpaI (1392)
PacI (2389)
T insert (2741)
HindIII (2778)
NcoI (2843)
SnaBI (3230)
EcoRV (3403)
EcoRV (3634)
BamHI (4657)
XbaI (4663)
PstI (4869)
EcoRV (4881)
EcoRI (4875)
HindIII (4887)
ClaI (4893)
AccI (4902)
HincII (4902)
SalI (4902)
XhoI (4908)
EcoO109I (4916)
ApaI (4917)
KpnI (4923)
PvuII (5143)
ScaI (6692)
PvuII (530)
pKS-31G
(7132 bp)
P banana p31
35S 3'
GUS

FIG. 20

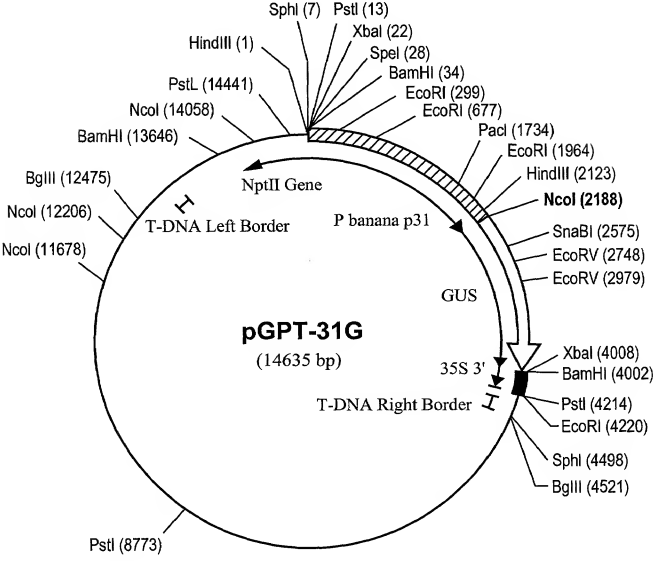

SphI (7)
PstI (13)
XbaI (22)
SpeI (28)
BamHI (34)
EcoRI (299)
EcoRI (677)
PacI (1734)
EcoRI (1964)
HindIII (2123)
NcoI (2188)
SnaBI (2575)
EcoRV (2748)
EcoRV (2979)
XbaI (4008)
BamHI (4002)
PstI (4214)
EcoRI (4220)
SphI (4498)
BglII (4521)
PstI (8773)
NcoI (11678)
NcoI (12206)
BglII (12475)
BamHI (13646)
NcoI (14058)
PstL (14441)
HindIII (1)
NptII Gene
T-DNA Left Border
P banana p31
GUS
pGPT-31G
(14635 bp)
35S 3'
T-DNA Right Border

FIG. 21

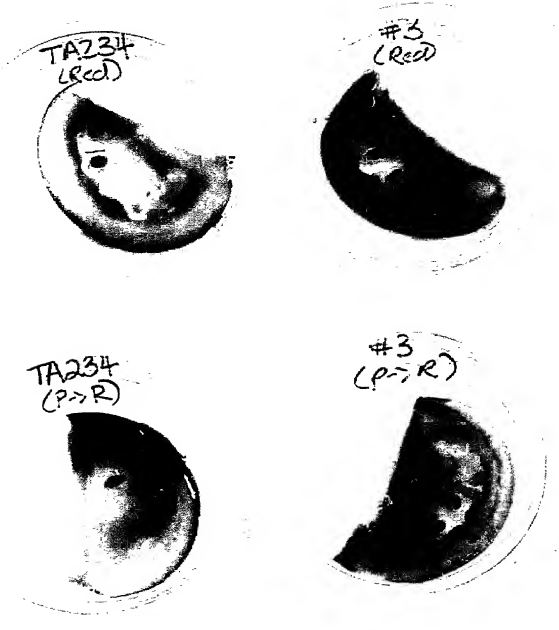


FIG. 22